

**SONY®**

VIDEOCASSETTE RECORDER

**BVW-75**



MAINTENANCE MANUAL

Volume 1 3rd Edition (Revised 5)

Serial No. 14822 and Higher

## SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety check before releasing the set to the customer:

Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

### LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 3.5mA. Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 5.25 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 20V AC range are suitable. (See Fig. A)

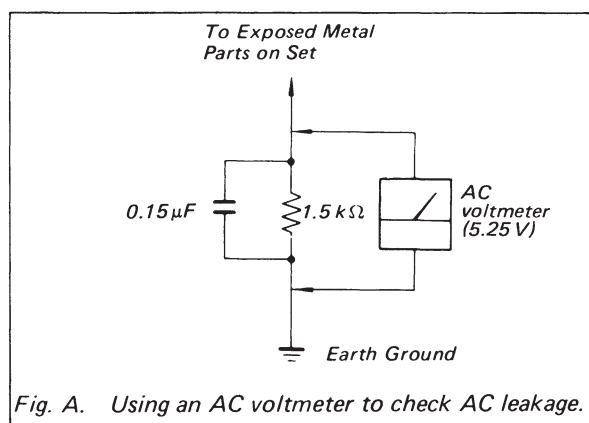


Fig. A. Using an AC voltmeter to check AC leakage.

このマニュアルに記載されている事柄の著作権は当社にあり、説明内容は機器購入者の使用を目的としています。従って、当社の許可なしに無断で複製したり、説明内容(操作、保守等)と異なる目的で本マニュアルを使用することを禁止します。

The material contained in this manual consists of information that is the property of Sony Corporation and is intended solely for use by the purchasers of the equipment described in this manual.

Sony Corporation expressly prohibits the duplication of any portion of this manual or the use thereof for any purpose other than the operation or maintenance of the equipment described in this manual without the express written permission of Sony Corporation.

Le matériel contenu dans ce manuel consiste en informations qui sont la propriété de Sony Corporation et sont destinées exclusivement à l'usage des acquéreurs de l'équipement décrit dans ce manuel.

Sony Corporation interdit formellement la copie de quelque partie que ce soit de ce manuel ou son emploi pour tout autre but que des opérations ou entretiens de l'équipement à moins d'une permission écrite de Sony Corporation.

Das in dieser Anleitung enthaltene Material besteht aus Informationen, die Eigentum der Sony Corporation sind, und ausschließlich zum Gebrauch durch den Käufer der in dieser Anleitung beschriebenen Ausrüstung bestimmt sind.

Die Sony Corporation untersagt ausdrücklich die Vervielfältigung jeglicher Teile dieser Anleitung oder den Gebrauch derselben für irgendeinen anderen Zweck als die Bedienung oder Wartung der in dieser Anleitung beschriebenen Ausrüstung ohne ausdrückliche schriftliche Erlaubnis der Sony Corporation.

# TABLE OF CONTENTS

## Volume 1

### 1. INSTALLATION

1-1.	Operational Environment	1-1
1-2.	Installation Space	1-1
1-3.	Operating Voltage	1-2
1-4.	Connection Connectors	1-2
1-5.	Input/Output Signals of the Connector	1-3
1-6.	Select Switch and Short Plug Setting	1-7
1-6-1.	Select Switch Setting	1-7
1-6-2.	Short Plug Setting	1-13
1-7.	System Control Setup	1-14
1-7-1.	Setup	1-16
1-7-2.	Setup Item/Data	1-18
1-8.	Rack Mounting	1-38
1-9.	Supplied Accessories	1-39
1-10.	Optional Accessories	1-39

### 2. TECHNICAL INFORMATION

2-1.	Specifications	2-1
2-2.	Location of the Printed Circuit Boards	2-5
2-3.	Location of the Main Mechanical Parts/Components	2-9
2-4.	Location of the Sensors	2-11
2-5.	Functions of the Sensors and Cassette Tab	2-13
2-5-1.	Function of the Sensors	2-13
2-5-2.	Function of the Cassette Plug and Tab	2-14
2-6.	Printed Circuit Boards	2-16
2-7.	Self Diagnosis Function	2-18

### 3. PERIODIC CHECK AND MAINTENANCE

3-1.	System Control Operation Check	3-1
3-1-1.	Playback, F.FWD, REW, SHUTTLE, JOG, and Preroll Function Checks	3-1
3-1-2.	DT Playback Function Check	3-4
3-1-3.	Record Function Check	3-5
3-1-4.	Editing Function Check	3-7
3-2.	Digital Hours Meter	3-9
3-2-1.	Outline	3-9
3-2-2.	Description of the Display Mode	3-9
3-2-3.	Mode Selection	3-9
3-3.	Maintenance after Repairs	3-10

3-3-1.	Cleaning Procedure of the Video Head	3-10
3-3-2.	Cleaning Procedure of the Stationary Heads	3-10
3-3-3.	Cleaning Procedure of the Tape Movement Areas	3-10
3-4-1.	Periodic Check	3-11
3-4-2.	Periodic Cleaning	3-13

### 4. SERVICE INFORMATION

4-1.	Removal of Cabinet	4-1
4-2.	Removal/Installation of Cassette-up Compartment	4-2
4-3.	Removal of the Power Block	4-2
4-4.	How to Pull in/out the Function Control Panel	4-3
4-5.	How to Open the Connector Panel	4-3
4-6.	Note for Check and Maintenance of Printed Circuit Board	4-3
4-7.	Extension Board	4-4
4-8.	Spare Parts	4-4
4-9.	How to Operate the Unit without Installing Cassette Tape	4-5
4-10.	How to Remove a Cassette when the Tape is Slackened in the Unit	4-6
4-11.	How to Check the Reel Table Operation	4-7
4-12.	Service of the Circuit Board	4-7
4-13.	How to Remove the Detection Switches	4-12
4-14.	Note for the Slip Ring	4-12
4-15.	How to Open the Cassette Lid	4-12
4-16.	Replacement of Audio Level Meter	4-13
4-17.	Fixture	4-14

### 5. REPLACEMENT OF MAJOR PARTS

5-1.	Replacement of the Reel Motor	5-1
5-2.	Replacement of the Reel Table	5-2
5-3.	Replacement of the Reel Table Transfer Motor	5-3
5-4.	Replacement of the Reel Table Transfer Belt	5-3
5-5.	Replacement of the Motor Plate Assembly	5-4
5-6.	Replacement of the Reel Table Brake	5-4
5-7.	Replacement of the Upper Drum	5-5

5-8.	Replacement of the Drum Assembly.....	5-7
5-9.	Replacement of the Brush Assembly .....	5-8
5-10.	Replacement of the Capstan Motor.....	5-8
5-11.	Replacement of the Audio/TC Head .....	5-9
5-12.	Replacement of the Audio Confidence Head.....	5-10
5-13.	Replacement of the CTL Head .....	5-11
5-14.	Replacement of the Full Erase Head.....	5-12
5-15.	Replacement of the Tension Regulator Block .....	5-13
5-16.	Replacement of the Supply Tension Roller .....	5-14
5-17.	Replacement of the Pinch Solenoid.....	5-15
5-18.	Replacement of the Threading Motor .....	5-16
5-19.	Replacement of the Pinch Roller .....	5-16
5-20.	Replacement of the Threading Ring.....	5-17
5-21.	Replacement of the Cassette-up Compartment Worm Gear .....	5-18
5-22.	Replacement of the Cassette-up Compartment Motor .....	5-19
5-23.	Item to Be Adjusted after Main Parts Replacement .....	5-20

## 6. LINK AND DRIVE SYSTEM ALIGNMENT

Alignment Information.....		6-1
6-1.	Reel Table System Adjustment .....	6-2
6-1-1.	Cassette Holder Height Adjustment (L) .....	6-2
6-1-2.	Cassette Holder Height Adjustment (S) .....	6-3
6-1-3.	Reel Motor Shaft Slantness Adjustment .....	6-4
6-1-4.	Reel Table Height Adjustment.....	6-5
6-1-5.	Reel Table Rotation Detector Block Position Adjustment .....	6-6
6-2.	Brake System Adjustment .....	6-7
6-2-1.	Reel Table Brake Clearance Adjustment .....	6-7
6-2-2.	Reel Table Brake Release Adjustment .....	6-7
6-3.	Tension Regulator System Adjustment .....	6-8
6-3-1.	Tension Regulator Arm Position Adjustment .....	6-8

6-3-2.	Tension Regulator Arm Slantness Adjustment .....	6-9
6-4.	Threading Ring Rotation Adjustment.....	6-10
6-5.	Gear Box Position Adjustment .....	6-11
6-6.	Pinch Roller Press Block Position Adjustment .....	6-12
6-7.	Tension Sensor Position Adjustment.....	6-13
6-8.	Tension Sensor Sensitivity Adjustment .....	6-14
6-9.	Cleaning Roller Position Adjustment.....	6-15

## 7. TORQUE ALIGNMENT

Alignment Information.....		7-1
7-1.	Brake Torque Check.....	7-3
7-1-1.	S Brake Torque Check .....	7-3
7-1-2.	T Brake Torque Check.....	7-3
7-2.	Reel Torque Adjustment.....	7-4
7-2-1.	Reel Zero Gram Torque Adjustment..	7-4
7-2-2.	Reel 250 Gram Torque Adjustment .....	7-5

## 8. TAPE RUN ALIGNMENT

Alignment Information.....		8-1
8-1.	Video Tracking Adjustment.....	8-5
8-2.	Audio/TC Head Adjustment .....	8-8
8-2-1.	Audio/TC Head Height Adjustment ..	8-8
8-2-2.	Audio/TC Head ZenithAdjustment.....	8-10
8-2-3.	Audio/TC Head Azimuth Adjustment .....	8-11
8-2-4.	Audio/TC Head Phase Adjustment .....	8-12
8-2-5.	Audio/TC Head Position Adjustment .....	8-13
8-3.	Audio Confidence Head Adjustment .....	8-14
8-3-1.	Audio Confidence Head Height Adjustment .....	8-14
8-3-2.	Audio Confidence Head Zenith Adjustment .....	8-16
8-3-3.	Audio Confidence Head Azimuth Adjustment .....	8-17
8-3-4.	Audio Confidence Head Phase Adjustment .....	8-18
8-4.	CTL Head Adjustment.....	8-19
8-4-1.	CTL Head Height Adjustment .....	8-19
8-4-2.	CTL Head Azimuth/Zenith Adjustment .....	8-20



8-4-3.	CTL Head Position Adjustment.....	8-21
8-5.	T Drawer Guide Block Tape Run Adjustment .....	8-22
8-6.	Slip Ring Brush Position Adjustment.....	8-23

## 9. POWER AND CONTROL SYSTEM ALIGNMENT

9-1.	DC Voltage Regulator (UR-21B) Adjustment .....	9-1
9-2.	Video OUT-3 Character Position Adjustment .....	9-2
9-3.	Tape Beginning Sensor Oscillation Level Check .....	9-2
9-4.	Tape End Sensor Oscillation Level Check ...	9-3

## 10. SERVO SYSTEM ALIGNMENT

10-1.	Preparation .....	10-2
10-2.	D/A Output Voltage Adjustment.....	10-3
10-3.	Supply Reel FG Duty Cycle Adjustment ..	10-3
10-4.	Take-up Reel FG Duty Cycle Adjustment .....	10-4
10-5.	Tension Sensor Impressed voltage Adjustment .....	10-4
10-6.	Tension Sensor AMP Offset Adjustment ..	10-4
10-7.	Capstan FG Duty Cycle Adjustment.....	10-5
10-8.	Capstan Free Speed Adjustment.....	10-5
10-9.	Drum Free Speed Adjustment .....	10-6
10-10.	Tracking Control Centering Adjustment ...	10-6
10-11.	Capstan Stop Servo Bias Adjustment.....	10-7
10-12.	Instant Start Adjustment .....	10-7
10-13.	Servo Framing Adjustment .....	10-8
10-14.	Framing Pulse Width Adjustment .....	10-9
10-15.	Capstan Acceleration Correction Adjustment .....	10-9
10-16.	R/P Head Y Switching Position Adjustment .....	10-10
10-17.	R/P Head C Switching Position Adjustment .....	10-11
10-18.	REC Drum Lock Phase Adjustment .....	10-12
10-19.	Picture Splitting Compensation Adjustment .....	10-12
10-20.	DT Servo Adjustment .....	10-13
10-20-1.	Drive Waveform Limiter Adjustment .....	10-13

10-20-2.	Distortion/Erasure Waveform Tentative Adjustment.....	10-13
10-20-3.	Strain Gage/Loop Gain Adjustment (CH-A) .....	10-14
10-20-4.	Strain Gage/Loop Gain Adjustment (CH-B).....	10-15
10-20-5.	Inclination Correction Gain Adjustment .....	10-16
10-20-6.	Sync Switching Pulse Adjustment ...	10-16
10-20-7.	DT V Timing Adjustment .....	10-17
10-20-8.	DT Y Switching Pulse Position Adjustment .....	10-17
10-20-9.	Anti-Rolling Adjustment .....	10-18
10-20-10.	Distortion/Erasure Waveform Offset Adjustment .....	10-18
10-20-11.	Distortion/Erasure Waveform Adjustment .....	10-18
10-21.	Rotary Erase Current Adjustment .....	10-19

## 11. AUDIO/TIME CODE ALIGNMENT

11-1.	REC Level Adjustment .....	11-3
11-2.	Line OUT Level Adjustment.....	11-3
11-3.	Output Level Adjustment.....	11-3
11-4.	Monitor OUT Level Adjustment .....	11-3
11-5.	Limiter Level Adjustment .....	11-4
11-6.	Dolby NR Skewing Adjustment.....	11-4
11-7.	R/P Head PB Frequency Response Adjustment (Dolby OFF) .....	11-5
11-8.	CONFI Head PB Frequency Response Tentative Adjustment (Dolby OFF).....	11-6
11-9.	R/P Head PB Level Adjustment .....	11-7
11-10.	CONFI Head PB Level Adjustment .....	11-7
11-11.	Time Code/Audio CH-1/2 Oscillation Frequency Adjustment .....	11-7
11-12.	Confi Head PB Phase Adjustment .....	11-8
11-13.	R/P Head PB Phase Adjustment .....	11-8
11-14.	Erase Current Adjustment .....	11-9
11-15.	Bias Oscillation Frequency Adjustment ...	11-13
11-16.	Bias Oscillation Level Adjustment .....	11-13
11-17.	Head Tuning Adjustment .....	11-13
11-18.	Bias Trap Adjustment .....	11-13
11-19.	CONFI Bias Trap Adjustment .....	11-14
11-20.	Bias Trap Adjustment (Insert Mode) .....	11-14
11-21.	Recording Bias Current Adjustment .....	11-15

11-22.	Oxide Tape Overall Phase Adjustment .....	11-16
11-23.	Metal Tape Overall Phase Adjustment.....	11-17
11-24.	Oxide Tape Overall Frequency Response Adjustment (Dolby OFF) .....	11-18
11-25.	Metal Tape Overall Frequency Response Adjustment (Dolby OFF) .....	11-19
11-26.	Oxide Tape Overall REC/PB Level Adjustment .....	11-20
11-27.	Metal Tape Overall REC/PB Level Adjustment .....	11-21
11-28.	CONFI Head Frequency Response Adjustment .....	11-22
11-29.	CONFI Level Adjustment .....	11-22
11-30.	Overall Crosstalk Adjustment.....	11-23
11-31.	Audio Insert Mode Crosstalk Adjustment .....	11-24
11-32.	Time Code Overall Crosstalk Adjustment .....	11-25
11-33.	Time Code Insert Crosstalk Adjustmemt...	11-25
11-34.	AFM REC Level Adjustment .....	11-28
11-35.	AFM Audio OUT Level Adjustment.....	11-28
11-36.	Level Meter OVU Adjustment .....	11-28
11-37.	LOG AMP Level Adjustment .....	11-29
11-38.	AFM Carrier Frequency Adjustment.....	11-29
11-39.	AFM RF Level Adjustment.....	11-30
11-40.	AFM DOC Level Adjustment .....	11-30
11-41.	Switching Noise Adjustment .....	11-31
11-42.	AFM PB SNR Output Level Adjustment .....	11-31
11-43.	AFM PB Level Adjustment.....	11-31
11-44.	AFM Recording Current Adjustment .....	11-32
11-45.	AFM Modulation Adjustment .....	11-33
11-46.	AFM Audio OUT REC/PB Level Adjustment .....	11-33
11-47.	LTC AMP OUT Adjustment.....	11-34

## 12. VIDEO SYSTEM ALIGNMENT

12-1.	DEC Board Adjustment.....	12-3
12-1-1.	Burst Gate Pulse Adjustment.....	12-3
12-1-2.	AGC Level Adjustment .....	12-3
12-1-3.	0H Delay Frequency Response Adjustment .....	12-4
12-1-4.	1H Delay Frequency Response Adjustment .....	12-4

12-1-5.	1H Delay Waveform Compensation Adjustment .....	12-5
12-1-6.	2H Delay Frequency Response Adjustment .....	12-6
12-1-7.	1H Video Correlation Adjustment...	12-7
12-1-8.	2H Video Correlation Adjustment...	12-7
12-1-9.	Y Linearity Adjustment .....	12-8
12-1-10.	Noise Canceler Balance Adjustment .....	12-8
12-1-11.	Y/C Cancel Adjustment .....	12-9
12-1-12.	Chroma Level Adjustment .....	12-10
12-1-13.	Y Level Adjustment .....	12-10
12-1-14.	Y Frequency Response Adjustment .....	12-11
12-1-15.	Chroma Frequency Response Check.....	12-11
12-1-16.	B-Y Carrier Balance Adjustment...	12-12
12-1-17.	R-Y Carrier Balance Adjustment...	12-12
12-1-18.	Decode Axis Phase Adjustment.....	12-12
12-1-19.	Blanking Width Adjustment .....	12-13
12-1-20.	B-Y Blanking Level Adjustment ...	12-13
12-1-21.	R-Y Blanking Level Adjustment ...	12-13
12-1-22.	B-Y Level Adjustment .....	12-14
12-1-23.	R-Y Level Adjustment .....	12-14
12-1-24.	Composite C-C Delay Adjustment .....	12-15
12-1-25.	CTDM Clock AFC Adjustment .....	12-15
12-1-26.	CTDM A/D REC DC Adjustment ..	12-16
12-1-27.	CTDM A/D Input Level Adjustment .....	12-16
12-1-28.	CTDM A/D Input DC Adjustment .....	12-17
12-1-29.	COMPONENT 2 Input Level Adjustment .....	12-17
12-1-30.	COMPONENT 1 Input Level Adjustment .....	12-18
12-1-31.	COMPOSITE Chroma Input Level Fine Adjustment.....	12-18
12-1-32.	B-Y/R-Y REF Sync Level Adjustment .....	12-18
12-1-33.	R-Y/B-Y REF Sync Adjustment ..	12-19
12-1-34.	CTDM Frequency Response Adjustment .....	12-20
12-1-35.	DUB CTDM Input Level Adjustment .....	12-20

12-1-36.	Component Output Y Level Adjustment .....	12-21	12-3-5.	Y-OA Frequency Response Check.....	12-42
12-1-37.	Composite Output Y Level Adjustment .....	12-21	12-4.	RP-29 (C) Board Adjustment.....	12-44
12-1-38.	VIDEO/RF Meter Adjustment .....	12-22	12-4-1.	C-PB RF Frequency Response Adjustment .....	12-45
12-1-39.	Y REF Sync Level Adjustment.....	12-22	12-4-2.	C-Metal REC Current and REC RF Secondary Distortion Adjustment ...	12-46
12-1-40.	Y REF Sync Level Adjustment.....	12-23	12-4-3.	C-Oxide REC Current Adjustment .....	12-47
12-1-41.	VITC/VISC Blanking Adjustment ...	12-24	12-4-4.	C-REC RF Frequency Response Adjustment .....	12-48
12-1-42.	VISC Adjustment .....	12-25	12-4-5.	C-OA Frequency Response Check.....	12-49
12-1-43.	COMPOPONENT Y Frequency Response Adjustment .....	12-25	12-4-6.	Crosstalk Adjustment .....	12-51
12-1-44.	COMPOSITE Y Frequency Response Adjustment .....	12-26	12-5.	DM-56 Board Adjustment .....	12-52
12-2.	MD-46 Board Adjustment .....	12-27	12-5-1.	Y RF Level Adjustment .....	12-52
12-2-1.	Y Input Level Adjustment.....	12-27	12-5-2.	Y RF Frequency Response Check.....	12-53
12-2-2.	VITC Level Adjustment .....	12-27	12-5-3.	Y RF AGC Output Level Adjustment .....	12-53
12-2-3.	Y Clamp Pulse Adjustment .....	12-28	12-5-4.	C RF Level Adjustment .....	12-54
12-2-4.	Y Deviation Adjustment .....	12-29	12-5-5.	C RF Frequency Response Check.....	12-55
12-2-5.	Y White/Dark Clkip Adjustment ...	12-30	12-5-6.	C RF AGC Output Level Adjustment .....	12-55
12-2-6.	Y-REC HF Slice Level Adjustment .....	12-31	12-5-7.	Y HF Adjustment .....	12-56
12-2-7.	Y Reference Pulse Level Adjustment .....	12-32	12-5-8.	HF Adjustment .....	12-57
12-2-8.	Y Modulator Balance Adjustment ..	12-32	12-5-9.	Y HF Balance Adjustment.....	12-59
12-2-9.	C Input Level Adjustment.....	12-33	12-5-10.	Y Limiter Baloance Adjustment ...	12-59
12-2-10.	C Clamp Pulse Adjustment .....	12-33	12-5-11.	Y Demodulator Balance Adjustment .....	12-60
12-2-11.	C Deviation Adjustment .....	12-34	12-5-12.	C HF Balance Adjustment.....	12-60
12-2-12.	C White/Dark Clip Adjustment ...	12-35	12-5-13.	C Limiter Balance Adjustment.....	12-61
12-2-13.	C Reference Pulse Timing Adjustment .....	12-35	12-5-14.	C Demodulator Balance Adjustment .....	12-61
12-2-14.	C-REC HF Slice Level Adjustment .....	12-36	12-5-15.	Y DUB OUT Level Adjustment ...	12-62
12-2-15.	C Reference Pulse Level Adjustment .....	12-37	12-5-16.	C DUB OUT Level Adjustment.....	12-62
12-2-16.	C Modulator Balance Adjustment...	12-37	12-5-17.	Y Video Frequency Response Adjustment .....	12-63
12-3.	RP-29 (Y) Board Adjustment .....	12-38	12-5-18.	C DUB Frequency Response Adjustment .....	12-65
12-3-1.	Y-PB RF Frequency Response Adjustment .....	12-39	12-5-19.	Y DT BIDIREX Output Adjustment .....	12-67
12-3-2.	Y-Metal REC Current and REC RF Secondary Distortion Adjustment ...	12-40	12-5-20.	Y Nonlinear De-emphasis Adjustment .....	12-68
12-3-3.	Y-Oxide REC Current Adjustment .....	12-40			
12-3-4.	Y-REC RF Frequency Response Adjustment .....	12-41			

12-5-21.	C Nonlinear De-emphasis Adjustment .....	12-70
12-5-22.	Y RF Envelope Adjustment .....	12-72
12-5-23.	Tracking Meter Calibration Adjustment .....	12-72
12-5-24.	Y DOC Sensitivity Adjustment .....	12-73
12-5-25.	C DOC Sensitivity Adjustment.....	12-75
12-6.	EN-48 Board Adjustment .....	12-77
12-6-1.	DUB R-Y/B-Y Level Adjustment .....	12-77
12-6-2.	COMPONENT 2 B-Y/R-Y Level Adjustment .....	12-77
12-6-3.	Clamp Pulse Position Adjustment...	12-78
12-6-4.	Chroma ID Level Adjustment.....	12-78
12-6-5.	Burst Position Adjustment.....	12-79
12-6-6.	SC Phase Adjustment.....	12-80
12-6-7.	Chroma Carrier Leak Tentative Adjustment .....	12-80
12-6-8.	COMPONENT 2 B-Y Blanking Level Adjustment.....	12-81
12-6-9.	DUB B-Y Blanking Level Adjustment .....	12-81
12-6-10.	DUB R-Y Blanking Level Adjustment .....	12-81
12-6-11.	Burst Level Adjustment .....	12-82
12-6-12.	U-V Phase Adjustment.....	12-82
12-6-13.	Chroma Level Adjustment .....	12-83
12-7.	VO-18 Board Adjustment .....	12-84
12-7-1.	Input Level Adjustment .....	12-84
12-7-2.	Pedestal Level Adjustment.....	12-84
12-7-3.	Y DC Level Adjustment.....	12-84
12-7-4.	Composite Sync Waveform Shaping Adjustment .....	12-85
12-7-5.	Component Sync Waveform Shaping Adjustment .....	12-85
12-7-6.	Video Output Level Adjustment ....	12-86
12-7-7.	DUB Y Output Level Adjustment ..	12-87
12-7-8.	COMPONENT 2 Y Output Level Adjustment .....	12-87
12-7-9.	Character Pedestal Adjustment ....	12-87
12-7-10.	VISC Level Adjustment.....	12-88
12-7-11.	Bypass Level Adjustment.....	12-88
12-7-12.	Setup Level Adjustment .....	12-89
12-7-13.	Frequency Response Compensation ..	12-89

### 13. TBC ALIGNMENT

13-1.	Sync Phase Adjustment.....	13-3
13-2.	INT Subcarrier Frequency Adjustment.....	13-4
13-3.	INT subcarrier Phase Adjustment .....	13-5
13-4.	SV Sync Adjustment .....	13-6
13-5.	1/2H BLK Width Adjustment .....	13-6
13-6.	REF 1st FLD Adjustment .....	13-7
13-7-1.	Y Blanking Width Adjustment.....	13-7
13-7-2.	C Blanking Width Adjustment.....	13-7
13-8.	Y-AD IN Level Adjustment.....	13-8
13-9.	C-AD IN Level Adjustment .....	13-8
13-10.	Y-AD IN Pedestal Clamp Adjustment ....	13-9
13-11.	C-AD IN Pedestal Clamp Level Adjustment .....	13-9
13-12.	Y Normal VCO Adjustment .....	13-10
13-13.	Y-WCK Frequency Adjustment.....	13-10
13-14.	C Normal VCO Adjustment.....	13-11
13-15.	C-WCK Frequency Adjustment.....	13-11
13-16.	Y-WCK FRB, Error Voltage Adjustment ..	13-12
13-17.	Y FFB Offset Adjustment .....	13-12
13-18.	Y Level Adjustment .....	13-13
13-19.	C Level Adjustment (B-Y) .....	13-13
13-20.	C Level Adjustment (R-Y) .....	13-13
13-21.	REF Video OUT Carrier Balance Adjustment .....	13-14
13-22.	REF Video OUT Burst Level Adjustment .....	13-14
13-23.	Sync Level Adjustment .....	13-14
13-24.	DT Switching Pulse Adjustment .....	13-15

### 14. OVERALL VIDEO ALIGNMENT

14-1.	Video Phase Adjustment.....	14-1
14-1-1.	PB Component Video Phase Adjustment .....	14-1
14-1-2.	PB Component Y/C, C/C Delay Adjustment .....	14-2
14-1-3.	Oxide PB Component Y/C Delay Adjustment .....	14-3
14-1-4.	REC Component Video Phase Adjustment .....	14-3
14-1-5.	REC Component Y/C Delay Adjustment (Metal) .....	14-4
14-1-6.	REC Component R-Y/B-Y Delay Adjustment .....	14-4

14-1-7.	Oxide REC Component Y/C Delay Adjustment .....	14-4
14-2.	SYNC Phase Adjustment.....	14-5
14-2-1.	PB Composite Sync Phase Adjustment .....	14-5
14-2-2.	ID Mix Pulse Adjustment.....	14-6
14-2-3.	PB Composite Y/C Delay Adjustment (Metal) .....	14-6
14-2-4.	Encoder Field Pulse Adjustment ...	14-7
14-2-5.	SCH OUT LED Adjustment.....	14-7
14-2-6.	Decoder Field Pulse Adjustment ...	14-8
14-2-7.	Composite Y/C Delay Adjustment .....	14-9
14-3.	VISC Adjustment .....	14-10
14-3-1.	Decoder VISC Phase Adjustment .....	14-10
14-3-2.	VISC Duty Cycle Adjustment.....	14-11
14-3-3.	VISC Phase Adjustment .....	14-11

## Volume 2

### 15. BLOCK DIAGRAM

### 16. SCHEMATIC DIAGRAM

### 17. PRINTED WIRING BOARDS

### 18. SEMICONDUCTOR ELECTRODES

### 19. SPARE PARTS AND FIXTURE



# SECTION 1

## INSTALLATION

Be sure to install the BVW-75 in locations satisfying the required operational environment described below to assure the BVW-75's superior performance and to maintain the excellent serviceability and accessibility.

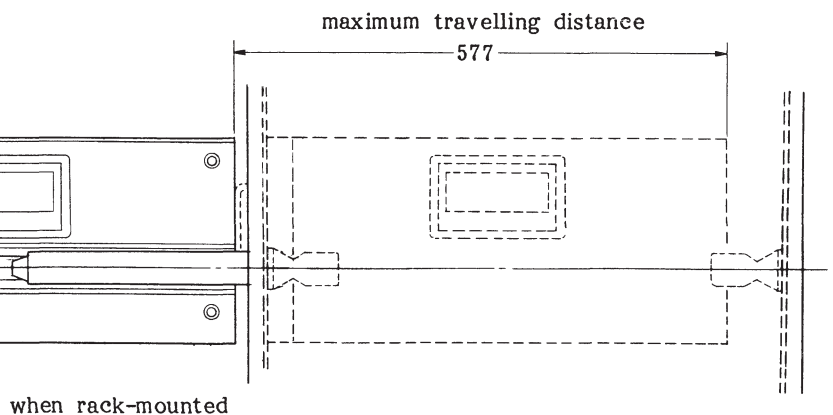
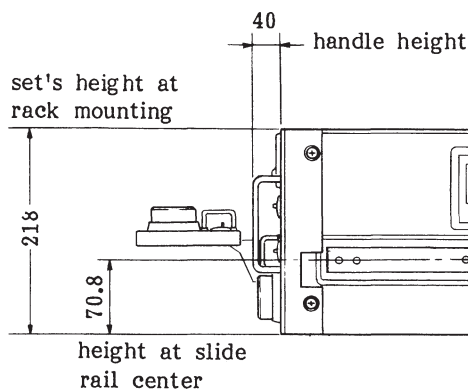
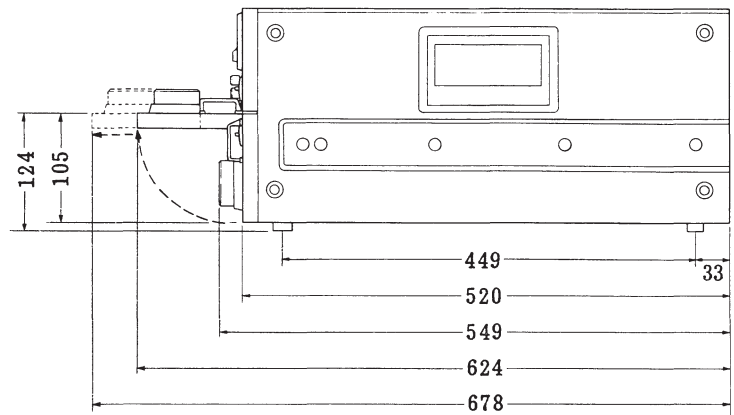
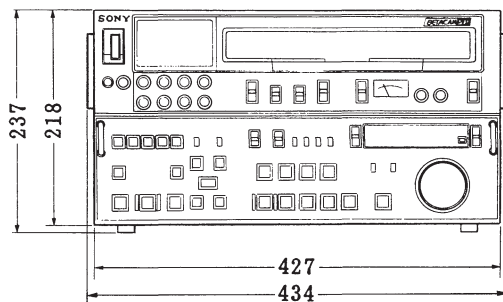
### 1-1. OPERATIONAL ENVIRONMENT

1. Operating temperature:  
5° C to 40° C  
(Good air circulation is essential to prevent internal heat build-up. Place the unit in locations with sufficient air circulation. Do not block the ventilation holes on the cabinet and the rear panel.)
2. Storage temperature:  
-20° C to +60° C
3. Locations to avoid:  
Areas where the BVW-75 will be exposed to direct sunlight or any other strong lights.

- . Dusty areas or areas where it is subject to vibration.
- . Areas with strong electric or magnetic fields.
- . Areas near heat sources.

### 1-2. INSTALLATION SPACE

1. The outer dimensions of the unit are shown in the figure below. The rear side must be at least 40 cm from the wall for ventilation and maintenance.
2. When the unit is operated on a desk or similar condition, assure that the clearance above the unit is at least 40 cm to provide accessibility to the printed circuit boards and other mechanical parts. Note that it is not necessary to provide the space when the unit is mounted in a rack since the printed circuit boards can be repaired after it is pulled out.



Unit: mm



### 1-3. OPERATING VOLTAGE

90 V to 265 V

48 Hz to 64 Hz

Power consumption : 240 W

### 1-4. CONNECTION CONNECTORS

When external cables are connected to the various connectors on the connector panel during maintenance, the hardware listed below (or equivalents) must be used.

Panel Indication	Connection Connector	Panel Indication	Connection Connector
VIDEO INPUT REF VIDEO COMPONENT 2 (Y, R-Y, B-Y)	1-560-069-11 PLUG, BNC, MALE	TBC REMOTE	1-561-610-21 CONNECTOR, 15P, FEMALE and 1-561-929-00 JUNCTION SHELL
DUB/COMPONENT 1	1-562-159-00 PLUG, 12P, FEMALE	REMOTE-1 IN (9P) REMOTE-1 OUT (9P)	1-560-651-00 CONNECTOR, 9P (M) and 1-561-749-00 JUNCTION SHELL, 9P
VIDEO OUTPUT 1/2/3 REF VIDEO COMPONENT 2 (Y, R-Y, B-Y)	1-560-069-11 PLUG, BNC, MALE	REMOTE-2 (36P)	1-508-852-00 CONNECTOR 36P, MALE
DUB/COMPONENT 1	1-560-995-00 PLUG, 12P, MALE		
AUDIO INPUT CH-1/CH-2/CH-3/CH-4	1-508-084-00 CONNECTOR, XLR, 3P, MALE		
AUDIO OUTPUT CH-1/CH-2/CH-3/CH-4 SELECTED : CH-1/CH-3 : CH-2/CH-4	1-508-083-00 CONNECTOR, XLR, 3P, FEMALE		
TIME CODE IN	1-508-084-00 CONNECTOR, XLR, 3P, MALE		
TIME CODE OUT	1-508-083-00 CONNECTOR, XLR, 3P, FEMALE		
MONITOR	1-506-161-00 CONNECTOR, 8P, MALE		

## 1-5. INPUT/OUTPUT SIGNALS OF THE CONNECTOR

### INPUT

#### VIDEO INPUT

REF VIDEO : BNC x 2 (loop through)  
1.0  $\pm$  0.3 Vp-p, 75 ohms, sync  
negative

VIDEO INPUT : BNC x 2 (loop through)  
Composite video, 1.0Vp-p, 75 ohms,  
sync negative

#### DUB/COMPONENT 1

: 12-pin multi connector (male)  
Luminance : 1.0 Vp-p, 75 ohms,  
sync negative  
Chrominance  
R-Y : 0.7 Vp-p,  
75 ohms  
B-Y : 0.7 Vp-p,  
75 ohms

#### COMPONENT 2 : BNC x 3

Y : 1.0 Vp-p, 75 ohms, sync  
negative  
R-Y : 0.7 Vp-p, 75 ohms  
B-Y : 0.7 Vp-p, 75 ohms

#### AUDIO INPUT

##### CH-1/CH-2/CH-3/CH-4

: XLR 3-pin x 4 (female)  
LOW : -60dBm, 600 ohms (or  
3k ohms), balanced  
HIGH: +4dBm, 600 ohms (or  
10k ohms), balanced

TIME CODE IN : XLR 3-pin (female)  
0.5 V to 18 Vp-p, 10k ohms,  
balanced

### OUTPUT

#### VIDEO OUTPUT

REF VIDEO : BNC  
Black burst, 75 ohms, sync  
negative (286 mV)

#### VIDEO OUTPUT 1/2/3

: BNC x 3  
Composite video, 1.0 Vp-p,  
75 ohms, sync negative  
By setting the internal board  
switch, non-composite video  
(0.714Vp-p, 75 ohms) can be  
output from the VIDEO OUTPUT  
2 connector, and time code and  
other information can be  
superimposed on the signal  
output from VIDEO OUTPUT 3  
connector.

#### DUB/COMPONENT 1

: 12-pin multi (female)  
Luminance : 1.0 Vp-p, 75 ohms  
sync negative  
Chrominance : R-Y : 0.7 Vp-p  
75 ohms  
B-Y : 0.7 Vp-p  
75 ohms

#### COMPONENT 2 : BNC x 3

Y : 1.0 Vp-p, 75 ohms, sync  
negative  
R-Y : 0.7 Vp-p, 75 ohms  
B-Y : 0.7 Vp-p, 75 ohms

#### AUDIO OUTPUT

##### CH-1/CH-2/CH-3/CH-4

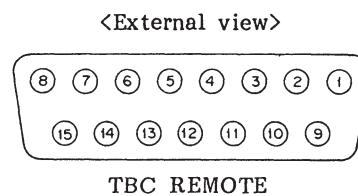
: XLR 3-pin x 4 (male)  
+4dBm (600-ohm load), low  
impedance, balanced

SELECTED : XLR 3-pin x 3 (male)  
+4dBm (600-ohm load), low  
impedance, balanced

TIME CODE OUT: XLR 3-pin (male)  
2.2 Vp-p, 600 ohms, balanced

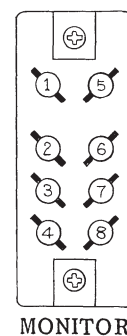
## TBC REMOTE

Pin No.	Description	Operating Voltage	IN/OUT
1	SYNC CONTROL	-5 V to +5 V	IN
2	HUE CONTROL	-5 V to +5 V	IN
3	SC CONTROL	-5 V to +5 V	IN
4	VIDEO LEVEL CONTROL	-5 V to +5 V	IN
5	SETUP CONTROL	-5 V to +5 V	IN
6	CHROMA LEVEL CONTROL	-5 V to +5 V	IN
7	-12 V	-12 V	OUT
8	GND	—	IN/OUT
9	FRAME GND	—	IN/OUT
10	NC	—	—
11	NC	—	—
12	NC	—	—
13	Y/C DELAY CONTROL	-5 V to +5 V	IN
14	NC	—	—
15	+12 V	+12 V	OUT



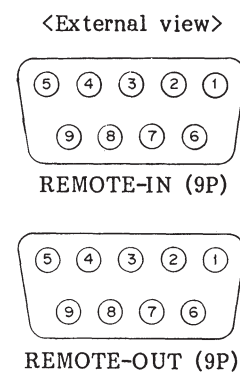
## MONITOR

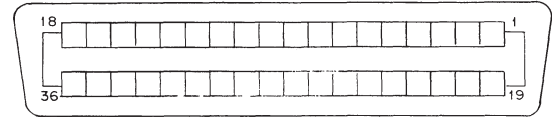
Pin No.	Output Signal
1	AUDIO MONITOR OUT (X)
2	VIDEO OUT (X)
3	—
4	—
5	AUDIO MONITOR OUT (G)
6	VIDEO OUT (G)
7	—
8	—



## REMOTE-1 IN (9P)/REMOTE-1 OUT (9P)

Pin No.	Controlling Device	Controlled Device
1	Frame Ground	Frame Ground
2	Receive A	Transmit A
3	Transmit B	Receive B
4	Transmit Common	Receive Common
5	Spare	Spare
6	Receive Common	Transmit Common
7	Receive B	Transmit B
8	Transmit A	Receive A
9	Frame Ground	Frame Ground



**REMOTE-2 (36P)****REMOTE-2 (36P)**

Pin No.	Description	Level
1	UNREG 5 V	TTL
2	L-FF COMMAND IN	TTL
3	L-FWD COMMAND IN	TTL
4	L-REW COMMAND IN	TTL
5	L-EJECT COMMAND IN	TTL
6	L-STOP COMMAND IN (*1)	TTL
7	L-PAUSE COMMAND IN (*1)	TTL
8	L-REC COMMAND IN	TTL
9	L-CUT IN COMMAND IN	TTL
10	L-EDT COMMAND IN	TTL
11	L-CUT OUT COMMAND IN	TTL
12	L-FF STATUS OUT	TTL
13	L-FWD STATUS OUT	TTL
14	L-REW STATUS OUT	TTL
15	L-STANDBY STATUS OUT	TTL
16	L-STOP STATUS OUT	TTL
17	L-PAUSE STATUS 1 IN/OUT	TTL
18	L-REC STATUS OUT	TTL
19	L-INSERT STATUS OUT	TTL
20	L-VIDEO INSERT IN	TTL
21	L-AUDIO-1 INSERT IN	TTL
22	L-AUDIO-2 INSERT IN	TTL
23	L-REVERSE COMMAND IN	TTL
24	SPEED A IN	TTL
25	SPEED B IN	TTL
26	L-CTL PULSE OUT	TTL
27	L-TACH OUT	TTL
28	L-CAPSTAN LOCK OUT	TTL
29	SYNCHRONIZE IN	3.0 V; 0 % -0.3 V; -10 to -15 % +6 V; +10 to +15 %

30	L-STILL TENSION IN (*3)	——
31	H-NORMAL FWD IN	TTL
32	L-PAUSE STATUS 2 OUT	TTL
33	L-SEARCH STATUS IN	TTL
34	NC (*2)	——
35	GND	——
36	GND	——

**NOTES:**

- \*1. Holding pins 6 and 7 low simultaneously places unit in the "STANDBY ON/OFF" mode.
- \*2. When connecting the BVBC-10, set S302 on the SY-61 board to ON.
- \*3. When connecting the BVR-510A, set System Setup Item 204 to "ENABLE" (refer to Section 1-7).

## 1-6. SELECT SWITCH AND SHORT PLUG SETTING

### 1-6-1. Select Switch Setting

Along with the select switches on the control panel and function control panel, there are system select switches on the circuit boards. These switches must be set according to operating condition.

#### DEC-27 Board

S1: 2H/3H-Correlator Adjustment

2H: Adjusts the 2H correlator.

3H: Adjusts the 3H correlator.

When the set is shipped, this switch is set to the 3H position.

#### DEC-42 Board

S500: VITC BLANKING Select Switch

(Used for System Setup Item 601.)

SEL: Blanks the incoming Video signal line which corresponds to the the VITC insertion line designated by this set.

ALL: Blanks all V blanking signals.

When the set is shipped, this switch is set to the SEL position.

#### TBC-7 Board

S101: VISC ON/OFF Switch

When the set is shipped, this switch is set to the ON position.

S200: TEST Switch

When the set is shipped, this switch is set to the ON position.

(Used for electrical alignment at the factory.)

#### TBC-8 Board

S500: Bit 1 DIGITAL COMB FILTER CHROMA NOISE CANCEL Switch (G-1)

ON: Turns the chroma digital comb filter off.

OFF: Turns the chroma digital comb filter on.

When the set is shipped, this switch is set to the OFF position.

Bit 2 LINE ADDER ON/OFF Switch

ON: Turns the line adder on during DT.

OFF: Turns the line adder off during DT.

When the set is shipped, this switch is set to the OFF position.

Bit 3 Undefined.

When the set is shipped, this switch is set to the OFF position.

Bit 4 VISC MUTE ON/OFF Switch

ON: Outputs a VISC signal to the VIDEO OUT connector.

OFF: Outputs no VISC signal to the VIDEO OUT connector.

When the set is shipped, this switch is set to the OFF position.

#### TBC-9 Board

S1: 1/2H BLANKING ON/OFF Switch (B-1)

ON: Turns 1/2H blanking on during V blanking.

OFF: Turns 1/2H blanking off during V blanking.

When the set is shipped, this switch is set to the OFF position.

S2: DESTINATION Switch (B-1)

When the set is shipped, this switch is set to:

JAPAN (For Japan only)

JAPAN (For other than Japan)

S3: Bits 1 through 8 / S4: Bits 1 and 2

BLANKING POSITION Select Switch (D-1)

During blanking, the arbitrary location of lines 12 through 21 can be selected using S3 and S4.

DIP switch	Line	DIP switch	Line
S3 - Bit 1	12	S3 - Bit 6	17
S3 - Bit 2	13	S3 - Bit 7	18
S3 - Bit 3	14	S3 - Bit 8	19
S3 - Bit 4	15	S4 - Bit 1	20
S3 - Bit 5	16	S4 - Bit 2	21

Turn on the bit of the switch corresponding to the blanking line.

When the set is shipped, this switch is set to the all ON position.

**S4: Bit 8 TBC SYNC DELAY ON/OFF Switch (C-1)**  
For playback and EE pictures, the video signal is shifted by 16H relative to a sync signal (shifted 16H in the EE mode). The picture is thus shifted on the monitor.

To prevent the picture from being shifted, the sync signal of a playback picture is delayed by 16H relative to a reference input signal.

ON: Delayed by 16H.

OFF: Not delayed (in phase with reference sync signal).

When the set is shipped, this switch is set to the ON position.

Bits 3 through 7

Undefined

#### EN-48 Board

**S1: COLOR/B&W Mode Select Switch (A-3)**

(Used for electrical alignment at the factory.)

ON: B&W mode

OFF: COLOR mode

When the set is shipped, this switch is set to the OFF position.

**S2: ID BLANKING ON/OFF Switch (A-2)**

(Used for electrical alignment at the factory.)

Selects whether a color framing ID pulse should be added to the component signal.

ON: Adds a color framing ID pulse.

OFF: Does not add a color framing ID pulse.

When the set is shipped, this switch is set to the OFF position.

#### VO-18 Board

**S1: Character Background Color Select Switch**

W BACK: The background is white with black characters.

B BACK: The background is black with white characters.

**S2: Y-MUTE ON/OFF Switch (A-4)**

(Used for electrical alignment at the factory.)

ON: Mutes the Y signal of the composite signal output from the VIDEO OUT connector.

OFF: Outputs a normal composite signal from the VIDEO OUT connector.

When the set is shipped, this switch is set to the OFF position.

**S3: VIDEO OUTPUT SIGNAL Select Switch (A-3)**

This switch selects the type of video signal output from the VIDEO OUTPUT 2 connector on the connector panel.

ON: Outputs a non-composite video signal.

OFF: Outputs a composite video signal.

When the set is shipped, this switch is set to the OFF position.

**S4: REGENE 1 Switch**

This switch selects whether a VISC signal is output from the DUB/COMPONENT 1 OUT connector.

ON: Output with a VISC signal.

OFF: Output without a VISC signal.

When the set is shipped, this switch is set to the ON position.



**S5: REGENE 2 Switch**

This switch selects whether a VISC signal is output from the COMPONENT 2 OUT connector.

ON: Output with a VISC signal.

OFF: Output without a VISC signal.

When the set is shipped, this switch is set to the OFF position.

**SY-61 Board**

**S101: CHARACTER ON/OFF Switch (E-12)**

ON: A character signal (time code and so on) is superimposed on the video signal which is output from the VIDEO OUT 3 connector and MONITOR connector.

OFF: No character signal is superimposed on the output video signal.

When the set is shipped, this switch is set to the ON position.

**S102: REEL POSITION Switch (C-12)**

When a cassette tape is inserted, the cassette size is detected and the reel table is automatically moved to the position corresponding to the cassette tape.

This switch is used to move the reel table position without inserting a cassette tape (when the switch is pressed repeatedly, the mode alternates between L and S).

**S103: SYSTEM SETUP MENU Switch (B-12)**

This switch is used to interface with an external unit and/or set the BVW-75's initial setup status. When the switch is pressed, a menu is displayed.

**S105: SYSTEM SETUP SET Switch (B-12)**

Press this switch after the displayed setup data on the menu is set. New data is then set.

**S106: SYSTEM SETUP MENU Select Switch (A-11)**

ON: Enables setup menu-1/2 operation.

OFF: Enables setup menu-1 operation.

When the set is shipped, this switch is set to the OFF position.

**S201: SYNCHRONIZE ON/OFF Switch (D-12)**

ON: Two VTRs are synchronized for editing with the BVW-75 as a controller.

OFF: Not synchronized.

When the set is shipped, this switch is set to the ON position.

**S202: VTR CONTROL Switch (F-12)**

EXT: Set when the BVW-75 is controlled remotely using an optional operation panel (BVR-75A) and extension cable (10-pin).

INT: Set when the BVW-75's operation panel is used.

When the set is shipped, this switch is set to the INT position.

**S203 and S204: Undefined**

**S206: SYSTEM RESET Switch (G-12)**

When this switch is pressed, the VTR is reset to the same state as when power is turned on.

**S302: TAPE DIRECTION SIGNAL ON/OFF Switch (H-6)**

This switch selects whether a TAPE DIRECTION (L-REV) signal should be output to pin 34 of a REMOTE-2 (36-pin) connector.

ON: Outputs a signal.

OFF: Outputs no signal.

When the set is shipped, this switch is set to the OFF position.

**SY-64 Board**

**S1: VITC/AUTO/LTC Select Switch (H-1)**

This switch selects whether the time code or user bit on the counter display indicator should be displayed using an LTC or VITC.

VITC: Displayed using a VITC.

AUTO: Displayed using an LTC when the tape runs at more than 1/2 times normal speed and displayed using a VITC when it runs at less than 1/2 times normal speed.

Displayed using an LTC in the REC/EE mode.

LTC: Displayed using an LTC.

When the set is shipped, this switch is set to the LTC position.

**S2: EXT/INT Select Switch (G-1)**

EXT: Set when the the external time code generator connected to a time code input terminal is used.

INT: Set when a built-in time code generator is used.

When the set is shipped, this switch is set to the INT position.

**S3: REGEN/PRESET Select Switch (F-1)**

REGEN: A built-in time code generator is genlocked to the time code signal which is read using a time code reader.

PRESET: Can be preset using an operation panel or remote control pin (9-pin).

When the set is shipped, this switch is set to the PRESET position.

**S4: REC RUN/FREE RUN Select Switch (E-1)**

REC RUN: A time code generator is activated only in the REC mode.

FREE RUN: A time code generator is activated irrespective of the VTR mode setting.

When the set is shipped, this switch is set to the FREE RUN position.

Note: This switch is valid only when S2 is set to INT, and S3 to PRESET. For settings other than the above, the switch is set to FREE RUN.

**S5: NDF/DF Select Switch (D-1)**

NDF: A time code generator and CTL counter are activated in the nondrop frame mode.

DF: A time code generator and CTL counter are activated in the drop frame mode.

When the set is shipped, this switch is set to the DF position.

Note: For the time code generator, this switch is valid only when S2 is set to INT, and S3 to PRESET. For settings other than the above, the switch is set to the value read using a time code reader.

**S6: VITC ON/OFF Switch (C-1)**

ON: The VITC time code generated using a built-in time code generator is recorded.

OFF: The VITC time code contained in an input video signal is recorded directly.

When the set is shipped, this switch is set to the ON position.

**S7: ID PRESET Select Switch (B-1)**

ON: Turned on when an ID signal is preset to the user bit and data is recorded using the user bit.

OFF: Normal setting

When the set is shipped, this switch is set to the OFF position.



**SV-82 Board**

**S101: Bit 1 TENSION SERVO ON/OFF Switch (B-1)**  
(Used for electrical alignment at the factory.)

ON: The tension servo feedback is not locked. Servo trouble detection is stopped.

OFF: The tension servo feedback is locked. Servo trouble detection is done.

When the set is shipped, this switch is set to the OFF position.

Bit 2    Forcible INSTANT START ON/OFF Switch

(Used for electrical alignment at the factory.)

ON: The forcible instant start circuit is always activated in the PLAY mode.

OFF: The forcible instant start circuit is activated for 0.5 seconds in the PLAY mode, and the VTR then enters the NORMAL PLAY mode.

When the set is shipped, this switch is set to the OFF position.

Bit 3    Forcible REC Mode Switch

(Used for mechanical alignment.)

This switch is used to play back a tape with the audio signal recorded on the CTL track (CTL height adjustment).

ON: The VTR enters the forcible REC mode to make the tape run at a fixed speed.

OFF: Normal setting

When the set is shipped, this switch is set to the OFF position.

Bit 4    PHI-SQUARE SERVO ON/OFF Switch

ON: The phi-square servo is not activated.

OFF: The phi-square servo is activated.

When the set is shipped, this switch is set to the ON position.

#### **SV-83 Board**

S1: H SHIFT MUTE Switch (A-3)

This switch is used to cancel the H lock during adjustment.

ON: The H lock is canceled.

OFF: The H lock is activated.

When the set is shipped, this switch is set to the OFF position.

#### **DT-13 Board**

S201: Bit 1    WOBBLING ON/OFF Switch (F-1)

(Used for electrical alignment.)

ON: Inhibits DT head wobbling.

OFF: Enables normal DT head wobbling.

When the set is shipped, this switch is set to the OFF position.

Bit 2    DYNAMIC TRACKING ON/OFF Switch

(Used for electrical alignment.)

ON: Inhibits dynamic tracking.

OFF: Enables normal dynamic tracking.

When the set is shipped, this switch is set to the OFF position.

S202: DEMAGNETIZE START Switch (E-1)

Pressing this switch starts demagnetizing.

#### **DT-14 Board**

S1: TRACKING SERVO ON/OFF Switch at Y/C delay (A-1)

ON: Inhibits tracking servo.

OFF: Enables normal tracking servo.

When the set is shipped, this switch is set to the OFF position.

#### **AU-76 Board**

S101, S102, S201, S202 (D-8, D-3, F-8, E-8)

Used for audio adjustment.

S301: Forcible CONF1 HEAD Playback Switch (B-1)

ON: Forcibly plays back using a CONF1 head in the normal PB mode.

OFF: Plays back using an RP head in the normal PB mode.

(Plays back using a CONF1 head in the REC mode.)

When the set is shipped, this switch is set to the OFF position.

## **DP-73 Board**

### **S1: SCALE VU/dB Select Switch**

VU: Displays the audio level in VU.

dB: Displays the peak-to-peak audio level.

When the set is shipped, this switch is set to the VU position.

### **S2: TEST Switch**

(Used for electrical alignment.)

ON: All indicators of the audio level meter light.

OFF: Normal display

When the set is shipped, this switch is set to the OFF position.

## **Setting the Audio Preset Level**

### **Setting the REC PRESET level**

To set the REC PRESET level relative to the factory setting (VU indication at +4dBm input, 0VU; peak indication, -9dB), use variable resistors on the BF-28 board according to the electrical alignment.

The preset level can be set from no signal to +6dB relative to the factory setting level.

(CH-1/RV101, CH-2/RV201, CH-3/RV301, CH-4/RV401)

### **Setting the PB PRESET level**

To set the PB preset level relative to the factory setting (+4dBm), use variable resistors on the BF-28 board according to the electrical alignment.

The preset level can be set from -6dB to +6dB relative to the factory setting level.

(CH-1/RV102, CH-2/RV202, CH-3/RV302, CH-4/RV402)

### **1-6-2. Short Plug Setting**

There are short plugs on the printed circuit boards. These plugs must be set according to operating condition.

#### **DEC-27 Board**

SP1 through SP4: Delay Line Crosstalk Adjustment

(Used for electrical alignment at the factory.)

When the set is shipped, SP1 through SP4 are set to the OPEN or SHORT position.

(Adjusted so that the delay line's crosstalk is optimized on each board. Short plug setting cannot be limited to the OPEN or SHORT position.)

#### **DM-56 Board**

SP2: Y RF AGC ON/OFF

(Used for electrical alignment.)

When the set is shipped, SP2 is set to the SHORT position.

SP302: C RF AGC ON/OFF

(Used for electrical alignment.)

When the set is shipped, SP302 is set to the SHORT position.

SP303: C Signal ON/OFF

(Used for electrical alignment.)

When the set is shipped, SP303 is set to the SHORT position.

#### **RP-29(Y) Board**

SP1 and SP2: REC/PB System Adjustment

(Used for electrical alignment.)

When the set is shipped, SP1 and SP2 are set to the SHORT position.

#### **RP-29(C) Board**

SP101 and SP102: REC/PB System Adjustment

(Used for electrical alignment.)

When the set is shipped, SP101 and SP102 are set to the SHORT position.

## 1-7. SYSTEM CONTROL SETUP

Various select switches are provided on the control panel, subcontrol panel, and printed circuit board in the unit (refer to Section 1-6 "Select Switch and Short Plug Setting").

For the system control items described below, the initial setting at the factory can be set as in Section 1-6 Select Switch and Short Plug Setting.

### ITEM LIST FOR INITIAL SETUP MENU

#### Setup Menu - 1

#### ITEM-000 SERIES: OPERATIONAL KEY PARAMETER

- 001: PREROLL TIME
- 002: CHARACTER H-POSITION
- 003: CHARACTER V-POSITION
- 004: CHARACTER V-SIZE
- 005: DISPLAY INFORMATION SELECT
- 006: LOCAL FUNCTION ENABLE
- 007: TAPE TIMER DISPLAY
- 008: MONITORING SELECTION FOR VTR-TO-VTR EDIT

#### Setup Menu - 2

#### ITEM-100 SERIES: OPERATIONAL PARAMETER

- 101: SELECTION FOR SEARCH DIAL ENABLE
- 102: MAXIMUM TAPE SPEED
- 103: AUDIO SELECTED LINE OUT
- 104: AUDIO MUTING TIME
- 105: REF VIDEO MISSING ALARM
- 106: CAPSTAN LOCK
- 107: REC INHIBIT LAMP FLASHING
- 108: AUTO EE SELECT
- 109: FORCED EE WHEN CASSETTE OUT
- 111: PROGRAM PLAY

#### ITEM-200 SERIES: REMOTE INTERFACE PARAMETER

- 201: PARA RUN
- 202: CF FLAG REPLY (625/50 ONLY)
- 203: STANDBY COMMAND FOR REMOTE-2 I/F
- 204: STILL TENSION CMD IN REMOTE-2 I/F

ITEM-300 SERIES: EDITING PARAMETER

- 301: VAR SPEED RANGE FOR SYNCHRONIZATION
- 302: CAPSTAN RELOCKING DIRECTION
- 303: EDIT DELAY
- 304: EDIT FIELD SELECT
- 305: SYNC GRADE
- 306: DMC INITIAL SPEED
- 307: AUTO-DELETION FOR INCONSISTENT DATA

ITEM-400 SERIES: PREROLL PARAMETER

- 401: FUNCTION MODE AFTER CUE-UP
- 402: TIME REFERENCE FOR PREROLL
- 403: AUTOMATIC PREROLL REFERENCE  
ENTRY

ITEM-500 SERIES: TAPE PROTECTION PARAMETER

- 501: STILL TIMER
- 502: TAPE PROTECTION MODE FROM SEARCH
- 503: TAPE PROTECTION MODE FROM STOP
- 504: DRUM ROTATION IN STANDBY OFF

ITEM-600 SERIES: TIME CODE GENERATOR PARAMETER

- 601: VITC POSITION SEL-1
- 602: VITC POSITION SEL-2
- 603: ID CODE PRESET
- 604: TCG REFERENCE
- 605: TCG REGEN MODE
- 606: TC OUTPUT SIGNAL IN REGEN MODE
- 607: U-BIT BINARY GROUP FLAG
- 608: PHASE CORRECTION
- 609: TCG CF FLAG
- 610: REGEN AUTO MODE

ITEM-800 SERIES: MISCELLANEOUS PARAMETER

- 801: BVE-3000 OPERATION

ITEM-900 SERIES: ADJUSTMENT USE ONLY

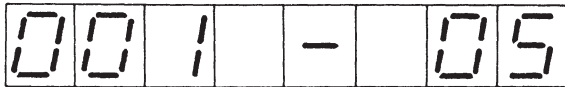
- 901: AUDIO NR IN SP MODE
- 902: EMERGENCY TAPE PROTECTION
- 907: CONFI SELECT IN PB MODE



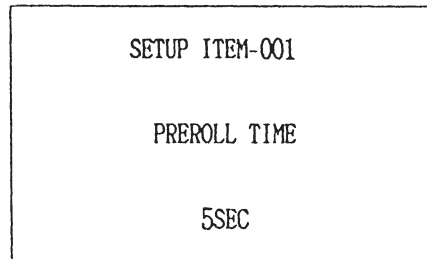
### 1-7-1. Setup

- . The system control is set up according to the following procedure.
  - . The setup appears on the function control panel's time counter display and monitor television.  
(To display the setup on the monitor, connect the monitor television to the VIDEO OUT-3 connector on the connector panel and turn on the CHARACTER ON/OFF switch on the SY-61 board.)
- (1) Turn on the unit POWER switch.
  - (2) Press the SYSTEM SETUP MENU switch on the SY-61 board; the SETUP ITEM-001 and PREROLL TIME are displayed.

Time counter display on the function control panel

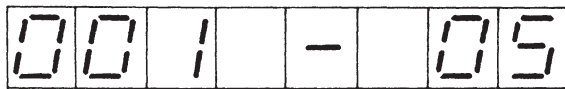


CHARACTER display



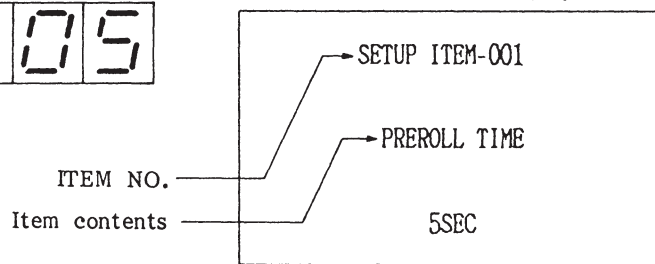
- (3) After the JOG mode is entered, turn the search dial and select the setup item to be set (the time counter display ITEM NO. blinks). Turn the search dial clockwise to increase the item number and counterclockwise to decrease it.

Time counter display on the function control panel



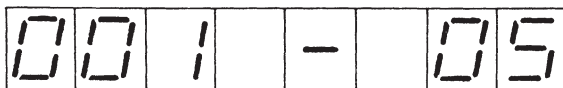
ITEM NO. blinks.

CHARACTER display



- (4) Turn the search dial while pressing the search button and set the data (the time counter display DATA NO. blinks). Turn the search dial clockwise to increase the data number and counterclockwise to decrease it.

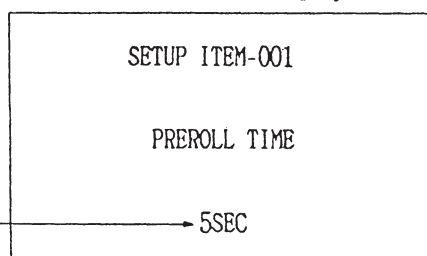
Time counter display on the function control panel



DATA NO. blinks.

Data contents

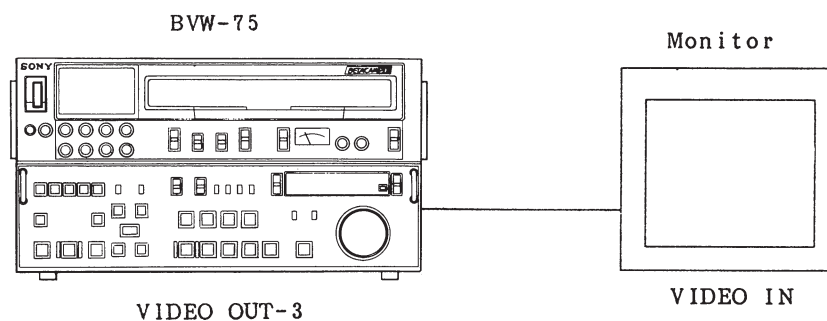
CHARACTER display



- (5) To modify other setup items, repeat Steps 3 and 4.
- (6) Press the SYSTEM SETUP switch on the SY-61 board after the data has been set.  
Setup data is then written into a nonvolatile memory (NVRAM). After that, the setting data remains unchanged even if the POWER switch is turned off.
- (7) To turn all data to the factory settings, press the time counter display RESET button after pressing the SYSTEM SETUP MENU switch.

Notes: For factory settings only the SETUP MENU-1 can be set as described above. To set the SETUP MENU-2, turn on switch S106 on the SY-61 board and set it in the same manner as described above.


#### Connection



# 1-7-2. Setup Item/Data

Setup Item		Setup Data		Item and Data Description
ITEM NO. Time Counter	Item Character Display	DATA NO. Time Counter	DATA Character Display	
ITEM-000 SERIES; OPERATIONAL KEY PARAMETER				
001	PREROLL TIME	00	0 SEC	Preroll time setting. The preroll time can be set from 0 to 15 seconds. When the unit is used for editing, the preroll time setting should be three seconds or more.  Factory setting: DATA No.05 (5 SEC)
		01	1 SEC	
		02	2 SEC	
		03	3 SEC	
		04	4 SEC	
		05	5 SEC	
		06	6 SEC	
		07	7 SEC	
		08	8 SEC	
		09	9 SEC	
		10	10 SEC	
		11	11 SEC	
		12	12 SEC	
		13	13 SEC	
		14	14 SEC	
		15	15 SEC	
002	CHARACTER H-POSITION	00	00/16	The time data and status monitor output from the VIDEO OUT-3 connector are positioned in the horizontal direction. When the DATA NO. is set to 00, the character is displayed at the left end of the screen. As the DATA NO. is increased, the character is moved by 1/16 steps of the display to the right.  Factory setting: DATA NO.04 (04/16)
		01	01/16	
		02	02/16	
		03	03/16	
		04	04/16	
		05	05/16	
		06	06/16	
		07	07/16	
		08	08/16	
		09	09/16	
		10	10/16	
		11	11/16	
		12	12/16	
		13	13/16	
		14	14/16	
		15	15/16	

003	CHARACTER V-POSITION	00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15	00/16 01/16 02/16 03/16 04/16 05/16 06/16 07/16 08/16 09/16 10/16 11/16 12/16 13/16 14/16 15/16	<p>The time data and status monitor output from the VIDEO OUT-3 connector are positioned in the vertical direction. When the DATA NO. is set to 00, the character is displayed at the top of the screen. When it is set to 15, the character is displayed at the bottom of the screen.</p> <p>Factory setting: DATA NO.12 (12/16)</p>
004	CHARACTER V-SIZE	0 1	SMALL LARGE	<p>The vertical size of the time data and status monitor output from the VIDEO OUT-3 connector is set.</p> <p>DATA NO.0: SMALL DATA NO.1: LARGE</p> <p>Factory setting: DATA NO.0 (SMALL)</p>
005	DISPLAY INFORMATION SELECT	0 1 2 3	TIME DATA & STATUS TIME DATA TIME & STATUS & MODE REPLY INDICATE	<p>When the CHARACTER ON/OFF switch is turned on, the data output from the VIDEO OUT-3 connector is selected.</p> <p>DATA NO.0: Displays the time data and status monitor. DATA NO.1: Displays the time data. DATA NO.2: Displays the time data, status monitor, and VTR mode. DATA NO.3: The letter "R" is displayed during DT playmode.</p> <p>Note: The VTR mode indicates whether the VTR is in the SP mode (Metal tape) or STD mode (Oxide tape). Usually, the SP mode is entered during cassette-out operation. When DATA NO.2 is selected, the previous cassette's mode is held.</p> <p>Factory setting: DATA NO.0 (TIME DATA &amp; STATUS)</p>

006	LOCAL FUNCTION ENABLE	0 1 2	ALL DISABLE STOP & EJECT ALL ENABLE	<p>When the VTR is set to the REMOTE mode, the switches/buttons on the function control panel are selected.</p> <p>DATA NO.0: No switches/buttons are activated.</p> <p>DATA NO.1: Only STOP and EJECT buttons are activated.</p> <p>DATA NO.2: All switches/buttons other than RECORDER and PLAYER buttons are activated.</p> <p>Factory setting: DATA NO.0 (ALL DISABLE)</p>
007	TAPE TIMER DISPLAY	0 1	+/-12H 24H	<p>Selects whether the CTL counter is displayed by <math>\pm 12H</math> or 24H.</p> <p>DATA NO.0: Displayed by <math>\pm 12H</math>.</p> <p>DATA NO.1: Displayed by 24H</p> <p>Factory setting: DATA NO.0 (<math>\pm 12H</math>)</p>
008	MONITORING SELECTION FOR VTR TO VTR EDIT	0 1	<p>RECORDER ONLY</p> <p>AUTO SWITCH</p> 	<p>When only one monitor television is connected to the recorder during tape editing with two VTRs, selects whether the player PB video and audio signals should be output to the monitor television by pressing the PLAYER button on the recorder's function control panel, irrespective of its PB.PB/EE switch setting.</p> <p>DATA NO.0: The recorder is not set to the EE mode, and the player's PB signal is selected using the recorder's PB.PB/EE switch.</p> <p>DATA NO.1: The recorder is set to the EE mode, and the player PB video and audio signals are output to the monitor television.</p> <p>Factory setting: DATA NO.0 (RECORDER ONLY)</p>

ITEM-100 SERIES; OPERATIONAL PARAMETER

101	SELECTION FOR SEARCH DIAL ENABLE	0 1	DIAL DIRECT VIA SEARCH BUTTON	<p>Sets entering the SEARCH mode.</p> <p>DATA NO.0: When the SEARCH dial is turned, the VTR enters the SEARCH mode from any mode other than REC/EDIT.</p> <p>DATA NO.1: When the SEARCH button is pressed, the VTR enters the SEARCH mode.</p> <p>Factory setting: DATA NO.0 (DIAL DIRECT)</p>
102	MAXIMUM TAPE SPEED	0 1 2	<p>X 35</p> <p>X 35</p> <p>(SHUTTLE X 24)</p> <p>X 24</p>	<p>Sets the maximum tape speed in the SEARCH mode.</p> <p>DATA NO.0: The maximum tape speed which is in the F.FWD/REW mode and which can be set using a dial in the SHUTTLE mode is 35 times normal speed.</p> <p>DATA NO.1: The maximum tape speed in the F.FWD/REW mode is 35 times normal speed. The maximum tape speed which can be set using a dial in the SHUTTLE mode is 24 times normal speed.</p> <p>DATA NO.2: The maximum tape speed which is in the F.FWD/REW mode and which can be set using a dial in the SHUTTLE mode is 24 times normal speed.</p> <p>Factory setting: DATA No.1 (X 35(SHUTTLE X 24))</p>

103	AUDIO SELECTED LINE OUT	0 1	MANUAL AUTO AFM/LNG SELECT	<p>Selects the signal output to AUDIO SELECTED OUTPUT.</p> <p>DATA NO.0: The selected signal is output using the AUDIO MONITOR SELECT switch.</p> <p>DATA NO.1: An AFM (CH-8/CH-4) signal is output in stereo in the metal particle tape PB mode, and an LNG (CH-1/CH2) signal in the oxide tape PB mode.</p> <p>DATA NO.2: The selected signal is output using the AUDIO MONITOR SELECT switch. However, when the AFM signal is selected in the variable-speed play mode, the LNG signal is output automatically.</p> <p>NOTE: When this item is set to AUTO, the level of the signal output from the SELECTED output connectors cannot be adjusted by any volumes.</p> <p>Factory setting: DATA NO.0 (MANUAL)</p>
104	AUDIO MUTING TIME	00 01 02 03 04 05 06 07 08 09 10	OFF 0.1 SEC 0.2 SEC 0.3 SEC 0.4 SEC 0.5 SEC 0.6 SEC 0.7 SEC 0.8 SEC 0.9 SEC 1.0 SEC	<p>When the VTR enters the PLAY mode from the STOP or STILL mode, sets the muting time of an audio signal. The muting time of the audio signal can be set from 0 (OFF) (not muted) to 1.0 second.</p> <p>Factory setting: DATA NO.00 (OFF)</p>
105	REF VIDEO MISSING ALARM	0 1	OFF ON	<p>When no REF video signal is supplied, selects whether it should be displayed as an alarm.</p> <p>DATA NO.0: No alarm display DATA NO.1: The STOP button lamp flashes as alarm display.</p> <p>Factory setting: DATA NO.0 (OFF)</p>



106	CAPSTAN LOCK	0 1 2 3	SWITCH SELECT 2F 2F/4F 4F	<p>Selects the CAPSTAN LOCK mode.</p> <p>DATA NO.0: Selected using capstan lock switch on the sub control panel.</p> <p>DATA NO.1: Capstan lock mode is 2F in spite of switch position.</p> <p>DATA NO.2: Capstan lock mode is 2F /4F in spite of switch position.</p> <p>DATA NO.3: Capstan lock mode is 4F in spite of switch position.</p> <p>Factory setting: DATA NO.0 (SWITCH SELECT)</p>
107	REC INHIBIT LAMP FLASHING	0 1	OFF ON	<p>Selects whether or not the lamp flashes.</p> <p>Selects whether or not the REC INHIBIT lamp flashes when the REC INHIBIT switch on the subcontrol panel is set to OFF and the record proof tab is broken.</p> <p>DATA NO.0: The lamp does not flash.</p> <p>DATA NO.1: The lamp flashes.</p> <p>Factory setting: DATA NO.0 (OFF)</p>
108	AUTO EE SELECT	0 1	STOP/F.FWD/ REW STOP	<p>When the PB.PB/EE switch on the control panel is set to the PB/EE mode, selects the VTR mode which automatically enters the EE mode.</p> <p>DATA NO.0: The video and audio signals in the STOP/EJECT/F.FWD/REW mode enter the EE mode.</p> <p>DATA NO.1: Video and audio signals enter the EE mode in only the STOP/EJECT mode.</p> <p>Factory setting: DATA NO.0 (STOP/F.FWD/REW)</p>

109	FORCED EE WHEN CASSETTE OUT	0 1	ON OFF	<p>Selects whether the PB/EE mode is controlled using a PB.PB/EE switch on the control panel during threading/unthreading and cassette OUT.</p> <p>DATA NO.0: The PB/EE mode cannot be controlled. DATA NO.1: The PB/EE mode can be controlled.</p> <p>Factory setting: DATA NO.0 (ON)</p>
111	PROGRAM PLAY	0 1	DISABLE ENABLE	<p>Select the DISABLE/ENABLE program play mode.</p> <p>DATA NO.0: Program play mode inoperational. DATA NO.1: Program play mode operational.</p> <p>Factory setting: DATA NO.0 (DISABLE)</p>

ITEM-200 SERIES; REMOTE INTERFACE PARAMETER				
201	PARA RUN	0 1	DISABLE ENABLE	<p>Selects whether two (or more) units should be operated in parallel operation.</p> <p>DATA NO.0: No parallel operation DATA NO.1: When the RECORDER and PLAYER buttons on the function control panel are pressed, the two lamps light. Operation can then be parallel.</p> <p>Note: To operate VTRs in parallel operation, set Item 201 of all VTRs to DATA NO.1.</p> <p>Factory setting: DATA NO.0 (DISABLE)</p>
202	CF FLAG REPLAY (625/50 ONLY)	0 1	8F 4F or 8F	<p>Selects to which mode the COLOR FRAME LOCK STATUS fed to the remote controller is set.</p> <p>DATA NO.0: 8F(Indicates that data is locked at 8 fields.) DATA NO.1: 4F or 8F (Indicates that data is locked at 4 fields or 8 fields.)</p> <p>Factory setting: DATA NO.0 (8F)</p>
203	STANDBY COMMAND FOR REMOTE-2 I/F	0 1	STOP & PAUSE STOP OR PAUSE	<p>Selects the STANDBY ON/OFF mode using the remote control unit which is connected to the REMOTE-2 connector (36-pin).</p> <p>DATA NO.0: When the STOP and PAUSE buttons are pressed simultaneously, the STANDBY mode is turned on or off. DATA NO.1: When the STOP button is pressed, the STANDBY ON mode is entered. When the PAUSE button is pressed in the STOP mode, the STANDBY mode is turned on or off.</p> <p>Factory setting: DATA NO.0 (STOP &amp; PAUSE)</p>

204	STILL TENSION CMD IN REMOTE-2 I/F	0 1	DISABLE ENABLE	<p>When a STILL TENSION command is output from the remote control unit connected to the 36-pin REMOTE-2 connector, selects whether the VTR accepts the command.</p> <p>DATA NO.0: No command is accepted. DATA NO.1: A command is accepted.</p> <p>Note: Select DATA NO.0 when connected to BVE-3000 and DATA NO.1 when connected to BVR-510A.</p> <p>Factory setting: DATA NO.0 (DISABLE)</p>
-----	--	--------	-------------------	--

ITEM-300 SERIES; EDITING PARAMETER

301	VAR SPEED RANGE FOR SYNCHRONIZA- TION	0 1	-1 ~ +2 -1.15 ~ +2.3	<p>Sets the speed range when the variable speed is controlled using the remote control unit connected to the REMOTE-1 connector (9-pin).</p> <p>DATA NO.0: -1 to +2 DATA NO.1: -1.15 to +2.3</p> <p>Note: Select DATA NO.1 when connected to the BVE-900 editing controller for DT editing. When DATA NO.1 is selected or the DT playback is done at -1 to +2 times normal speed or more, the picture may be missed at the bottom of the screen (this is not a defect).</p> <p>Factory setting: DATA NO.0 (-1 ~ +2)</p>
302	CAPSTAN RELOCKING DIRECTION	0 1	DECELERATION ACCELERATION	<p>When the CAPSTAN LOCK switch on the subcontrol panel is set to 4F, selects whether the capstan servo is locked in the acceleration or deceleration mode.</p> <p>DATA NO.0: Locked in the deceleration mode. DATA NO.1: Locked in the acceleration mode.</p> <p>Factory setting: DATA NO.0 (DECELERATION)</p>
303	EDIT DELAY	0 1	6 FIELD 4 FIELD	<p>Receives a recording command from the remote control unit during tape editing selects and the number of field delayed until the VTR starts recording.</p> <p>DATA NO.0: Starts recording six fields after the command is received. DATA NO.1: Starts recording four fields after the command is received.</p> <p>Note: Select DATA NO.1 when connected to BVE-500A.</p> <p>Factory setting: DATA NO.0 (6 FIELD)</p>

304	EDIT FIELD SELECT	0 1 2	1F 2F 1F/2F	<p>Selects the start timing during tape editing.</p> <p>DATA NO.0: Editing starts at field 1 and ends at field 2.</p> <p>DATA NO.1: Editing starts at field 2 and ends at field 1.</p> <p>DATA NO.2: Editing starts and ends at any field.</p> <p>Factory setting: DATA NO.0 (1F)</p>
305	SYNC GRADE	0 1	ACCURATE ROUGH	<p>Selects the editing accuracy when switch S201 (SYNCHRONIZE SW) on the SY-61 board is set to ON and editing is done in the sync mode.</p> <p>DATA NO.0: Editing is done with editing accuracy <math>\pm 0</math> frame.</p> <p>DATA NO.1: Editing is done with editing accuracy <math>\pm 1</math> frame.</p> <p>Factory setting: DATA NO.0 (ACCURATE)</p>
306	DMC INITIAL SPEED	00 01 02 03 04 05 06 07 08 09 10 11 12 13	MANUAL PLAY STILL +0.03 +0.1 +0.2 +0.5 +1 +2 -0.03 -0.1 -0.2 -0.5 -1	<p>Selects the initial speed which is set automatically in selecting DMC (Dynamic Motion Control).</p> <p>DATA NO.00: Sets the initial speed by the rotation angle of the search dial.</p> <p>DATA NO.01: The initial speed is a speed in the PLAY mode.</p> <p>DATA NO.02: The tape stops (STILL MODE).</p> <p>DATA NO.03 to 13: The initial speed is a speed in the search mode.</p> <p>Factory setting: DATA NO.00 (MANUAL)</p>

307	AUTO- DELETION FOR INCONSISTENT DATA	0 1 2	MANUAL NEG AND EXCESS NEG	<p>Selects the operation when an erroneous edit point is set.</p> <p>DATA NO.0: The DELETE lamp blinks and the ALARM display appears. Delete the undesired edit point or set the edit point correctly.</p> <p>DATA NO.1: When the edit point is set as <math>IN \geq OUT</math> or AUDIO <math>IN \geq AUDIO OUT</math> or the number of edit points is excessive, the previously entered edit point is deleted automatically.</p> <p>DATA NO.2: When the edit point is set as <math>IN \geq OUT</math> or AUDIO <math>IN \geq AUDIO OUT</math>, the previously entered edit point is deleted automatically. When the number of edit points is excessive, the DELETE lamp blinks and the ALARM display appears.</p> <p>Notes: . When the edit point's key and the DELETE key are pressed simultaneously, data at the edit point is deleted.  . When an erroneous edit point is set (the DELETE lamp blinks), editing (PREVIEW or AUTO EDIT) is not executed.</p> <p>Factory setting: DATA NO.0 (MANUAL)</p>
-----	---	-------------	------------------------------------	---

ITEM-400 SERIES; PREROLL PARAMETER				
401	FUNCTION MODE AFTER CUE-UP	0 1	STOP STILL	<p>Selects the mode after CUE-UP is completed.</p> <p>DATA NO.0: Enters the STOP mode. DATA NO.1: Enters the STILL mode.</p> <p>Factory setting: DATA NO.0 (STOP)</p>
402	TIME REFERENCE FOR PREROLL	0 1	CTL TC	<p>When a tape with the time code signal containing a discontinuous point is used and the discontinuous point is prerolled, selects whether the time code signal preceding the point is advanced and prerolled using a CTL signal.</p> <p>DATA NO.0: Advanced using a CTL signal. DATA NO.1: Not advanced using a CTL signal.</p> <p>Factory setting: DATA NO.0 (CTL)</p>
403	AUTOMATIC PREROLL REFERENCE ENTRY	0 1	DISABLE ENABLE	<p>Selects whether the IN point is entered by pressing only the PREROLL button when it is not entered during preroll operation.</p> <p>DATA NO.0: IN point is not entered automatically. DATA NO.1: IN point is entered automatically.</p> <p>Factory setting: DATA NO.0 (DISABLE)</p>



ITEM-500 SERIES; TAPE PROTECTION PARAMETER

501	STILL TIMER	00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15	0.5 SEC 5 SEC 10 SEC 20 SEC 30 SEC 40 SEC 50 SEC 1 MIN 2 MIN 3 MIN 4 MIN 5 MIN 6 MIN 7 MIN 8 MIN 30 MIN	<p>The unit automatically enters the tape PROTECTION mode after it has been in the tape STOP (or STILL) mode for a fixed time to protect the video head and tape.</p> <p>This item sets the transition time of the tape STOP to tape PROTECTION mode.</p> <p>The time can be set from 0.5 seconds to 30 minutes.</p> <p>Factory setting: DATA NO.14 (8 MIN)</p>
502	TAPE PROTECTION MODE FROM SEARCH	0 1 2	STEP FWD STANDBY OFF TENSION RELEASE	<p>When the time in the STILL mode set using Item 501 passes, the unit enters the tape PROTECTION mode. This item selects the tape PROTECTION mode setting.</p> <p>DATA NO.0: When the time designated by Item 501 passes, the tape is sent repeatedly for 2 seconds at 1/30 times normal speed in the forward direction.</p> <p>DATA NO.1: When the designated time passes, the unit enters the STANDBY OFF mode.</p> <p>DATA No.2: When the designated time passes, the unit enters the TENSION RELEASE mode.</p> <p>Factory setting: DATA NO.0 (STEP FWD)</p>
503	TAPE PROTECTION MODE FROM STOP	0 1	STANDBY OFF TENSION RELEASE	<p>When the time in the STOP mode set using Item 501 passes, the unit enters the tape PROTECTION mode. This item selects the tape PROTECTION mode setting.</p> <p>DATA NO.0: When the designated time passes, the unit enters the STANDBY OFF mode.</p> <p>DATA NO.1: When the designated time passes, the unit enters the TENSION RELEASE mode.</p> <p>Factory setting: DATA NO.0 (STANDBY OFF)</p>
504	DRUM ROTATION IN STANDBY OFF	0 1	OFF ON	<p>Turns the drum motor ON or OFF in the STANDBY OFF mode.</p> <p>DATA NO.0: The drum rotation stops.</p> <p>DATA NO.1: The drum is rotated.</p> <p>Factory setting: DATA NO.0 (OFF)</p>

ITEM-600 SERIES; TIME CODE GENERATOR PARAMETER

601	VITC POSITION SEL-1	12 13 14 15 16 17 18 19 20 21	12 LINE 13 LINE 14 LINE 15 LINE 16 LINE 17 LINE 18 LINE 29 LINE 20 LINE 21 LINE	<p>Selects into what line the VITC signal is inserted. The VITC signal can be inserted in lines 12 through 21.</p> <p>Note: Before the VITC signal is inserted into an input video signal, blank the insertion line. The two modes for blanking can be selected using S500 on the DEC-20 or DEC-42 board. SEL: Blanks the coming video signal line which corresponds to the VITC insertion line designated by this set. ALL: Blanks all V blanking signals. Factory setting: SEL</p> <p>Factory setting: DATA NO.16 (16 LINE)</p>
602	VITC POSITION SEL-2	12 13 14 15 16 17 18 19 20 21	12 LINE 13 LINE 14 LINE 15 LINE 16 LINE 17 LINE 18 LINE 19 LINE 20 LINE 21 LINE	<p>Selects into what line the VITC signal is inserted. The VITC signal can be inserted in lines 12 through 21.</p> <p>Note: In Items 601 and 602, the VITC signal can be inserted into two positions. Before the VITC signal is inserted into an input video signal, blank the insertion line. The two modes for blanking can be selected using S500 on the DEC-20 or DEC-42 board. SEL: Blanks the input video signal line which corresponds to the VITC insertion line designated by this set. ALL: Blanks all V blanking signals. Factory setting: SEL</p> <p>The VITC signal can be inserted into two positions by Items 601 and 602.</p> <p>Factory setting: DATA NO.18 (18 LINE)</p>

603	ID CODE PRESET	0 1	DISABLE ENABLE	<p>When the ID code is set, selects DATA NO.1 (ENABLE).</p> <p>DATA NO.0: The ID code is not set. DATA NO.1: The ID code set mode is entered.</p> <p>Note: To set the ID code, select the DATA NO.1 (ENABLE) in ITEM 603 and light up the HOLD lamp on the function control panel. By blinking time counter display urge ID code to set. Take a figure up or down places using SHIFT button and select the figure using ADVANCE button. Press the PRESET button after the ID code to set. This item is automatically disabled after setting ID code.</p> <p>Factory setting: DATA NO.0 (DISABLE)</p>
604	TCG REFERENCE	0 1	AUTO EXT	<p>Selects whether the reference signal for a time code generator should be extracted from the input video signal or the reference video signal.</p> <p>DATA NO.0: Signal is changed automatically under the same condition as servo reference. DATA NO.1: Extracted from the reference video signal.</p> <p>Factory setting: DATA NO.0 (AUTO)</p>
605	TCG REGEN MODE	0 1 2	TC & UB TC UB	<p>Selects the signal to be regenerated when the time code generator is in the REGEN mode.</p> <p>DATA NO.0: Both time code and user bit signals are regenerated. DATA NO.1: Only a time code signal is regenerated. DATA NO.2: Only a user bit signal is regenerated.</p> <p>Factory setting: DATA NO.0 (TC &amp; UB)</p>

606	TC OUTPUT SIGNAL IN REGEN MODE	0 1	OFF TAPE REGEN	<p>Selects the signal output from the TIME CODE OUT connector in the internal REGEN mode.</p> <p>DATA NO.0: The playback time code signal is not regenerated and output.</p> <p>DATA NO.1: The playback time code signal is regenerated and output only when the servo is locked in the PLAY mode.</p> <p>Factory setting: DATA NO.0 (OFF TAPE)</p>
607	U-BIT BINARY GROUP FLAG	00 01 10 11	NOT SPECIFIED ISO CHARACTER UNASSIGNED-1 UNASSIGNED-2	<p>Sets the user bit status of the time code signal which is generated using a time code generator.</p> <p>DATA NO.00: Character setting is not specified.</p> <p>DATA NO.01: 8-bit character setting based on ISO646 and ISO2022.</p> <p>DATA NO.10: Undefined.</p> <p>DATA NO.11: Undefined.</p> <p>Factory setting: DATA NO.00 (NOT SPECIFIED)</p>
608	PHASE CORRECTION	0 1	OFF ON	<p>Selects whether the phase of the LTC signal which is generated using a time code generator should be corrected and controlled.</p> <p>DATA NO.0: The phase is not corrected and controlled.</p> <p>DATA NO.1: The phase is corrected and controlled.</p> <p>Factory setting: DATA NO.0 (OFF)</p>

609	TCG CF FLAG	0 1 2	OFF ON AUTO	<p>Selects whether the blank bit CF flag of time code data should be turned on or off.</p> <p>DATA NO.0: The CF flag is turned off.</p> <p>DATA NO.1: The CF flag is turned on.</p> <p>DATA NO.2: The CF flag is turned on or off according to the relation between the recorded video signal and the time code's color framing pulse.</p> <p>Note: In the AUTO mode, the CF flag is controlled as described below according to the time code generator mode.</p> <p>INT *PRESET mode: The time code is generated when a CF flag is locked to the video signal. The CF flag is then turned on.</p> <p>INT *REGEN mode: When the capstan lock switch on the subcontrol panel is set to 4F, the CF flag is turned on. For setting other than the above, the CF flag is turned off.</p> <p>Factory setting: DATA NO.0 (OFF)</p>
610	REGEN AUTO MODE	0 1 2	ASSEM & INSERT ASSEM MANUAL	<p>Selects whether a time code is regenerated automatically in the MACHINE TO MACHINE EDIT mode.</p> <p>DATA NO.0: When this set is used as a recorder in the MACHINE TO MACHINE EDIT mode, the TCG regenerates according to the time code on tape during ASSEMBLE and INSERT editing, irrespective of REGEN/PRESET switch setting.</p> <p>DATA No.1: When this set is used as a recorder in the MACHINE TO MACHINE EDIT mode, the TCG regenerates according to the time code on tape during ASSEMBLE editing, irrespective of REGEN/PRESET switch setting.</p> <p>DATA NO.2: The time code generator is activated according to S2 (INT/EXT) and S3 (REGEN/PRESET) on the SY-64 board irrespective of the BVW-75's mode setting.</p> <p>Factory setting: DATA No. 0 (ASSEM &amp; INSERT)</p>

ITEM-800 SERIES; MISCELLANEOUS PARAMETER				
801	BVE-3000 OPERATION	0 1	OFF ON	<p>Item 801 should be set to ON when interfacing with BVE-3000.</p> <p>Factory setting: DATA No.0 (OFF)</p>

ITEM-900 SERIES; ADJUSTMENT USE ONLY				
<p>The items below are not displayed on the normal menu to avoid the erroneous operation. To display these items, turn the SEARCH dial while pressing the PLAY button. The three items are used exclusively for adjustment. After adjustment is completed, the switches should be returned to the factory setting position.</p>				
901	AUDIO NR IN SP MODE	0 1	ON SWITCH SELECT	<p>This setting is used exclusively for audio adjustment. After adjustment is completed, be sure to return the switch to the factory setting position. The Dolby NR control is selected when a metal tape is used for recording and playback.</p> <p>DATA NO. 0: Turned on at all times when the metal tape is used.</p> <p>DATA NO. 1: Turned on or off using a Dolby NR switch on the subcontrol panel.</p> <p>Note: When an oxide tape is used, set using an Dolby NR switch on the subcontrol panel irrespective of this setting.</p> <p>Factory setting: DATA NO.0 (ON)</p>
902	EMERGENCY TAPE PROTECTION	0 1	ENABLE DISABLE	<p>This setting is used exclusively for servo and mechanism adjustments. After adjustment is completed, be sure to return the switch to the factory setting position. When the VTR detects an error in the tape transport system, selects whether tape protection is done or not.</p> <p>DATA NO. 0: Tape protection is done.</p> <p>DATA NO. 1: Tape protection is not done.</p> <p>Note: When the data No. is 1, "-" (minus) is displayed on the keyboard panel's time counter.</p> <p>Factory setting: DATA NO.0 (ENABLE)</p>

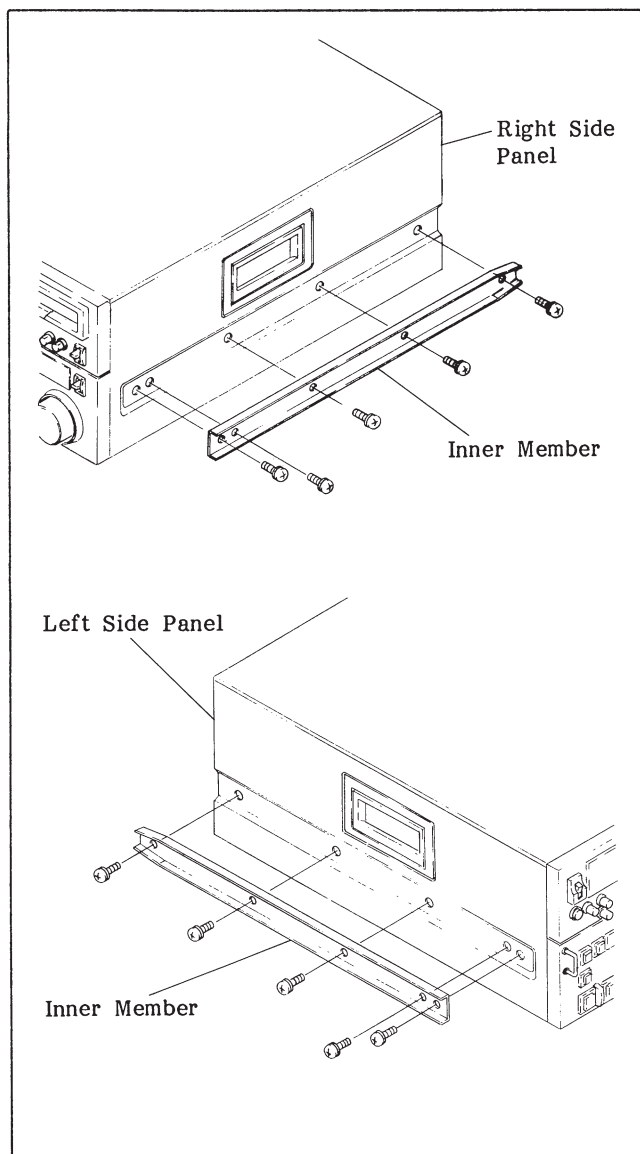
907	CONF1 SELECT IN PB MODE	0 1	DISABLE ENABLE	<p>This setting is used exclusively for confi head adjustment of the BVW-70. After adjustment is completed, be sure to return the switch to the factory setting position. The playback video head is selected in the PB mode.</p> <p>DATA NO. 0: Enters the R/P HEAD PB mode in the PB mode. DATA NO. 1: Enters the CONF1 HEAD PB mode when the CONF1 switch on the keyboard panel is turned on. Enters the R/P HEAD PB mode when it is turned off.</p> <p>Factory setting: DATA NO.0 (DISABLE)</p>
-----	----------------------------	--------	-------------------	---

## 1-8. RACK MOUNTING

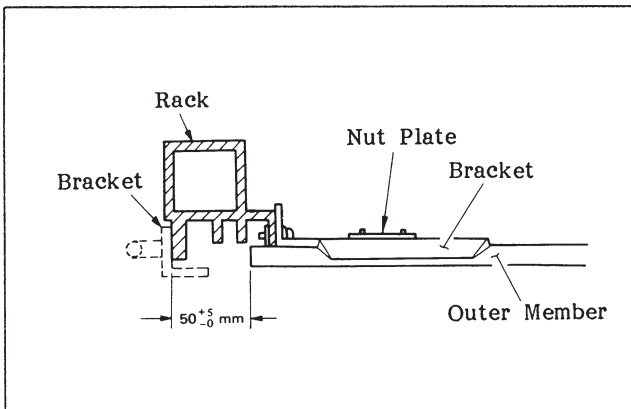
The unit can be mounted in the 19-inch standard rack. It is recommended to use the Rack Mount Kit, RMM-100, optional accessory (including the slide rails, the handle bracket and fixing screws) or the following ACCURIDE's slide rails.

- . RACK-MOUNT SLIDES MODEL 305
- . SLIDE LENGTH 22 INCH

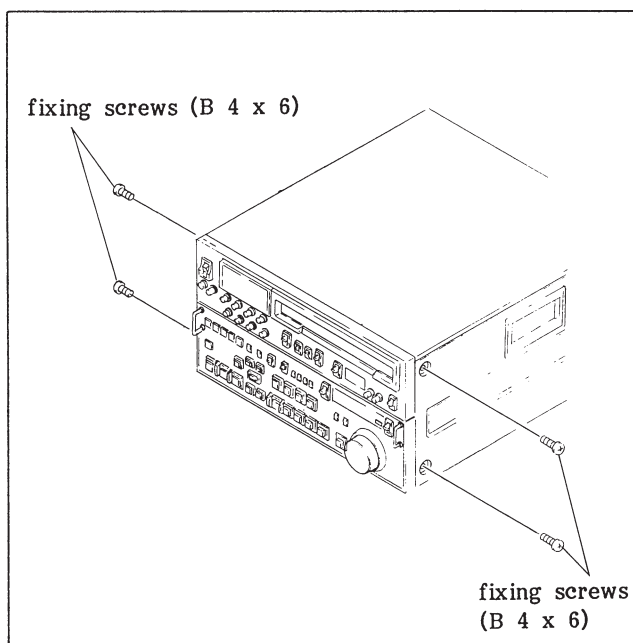
1. Remove the five fixing screws on the Right and Left Side Panels.
2. Install the Inner Members of the slide rails to the Right and Left Side Panels with the screws removed in Step (1).



3. Remove the four feet on the Lower Panel.
  - . If the unit is mounted in the rack with the feet attached, they will contact the lower and the upper portions of the rack and the unit cannot be pulled out from the rack.
4. Install the Outer Member bracket of the slide rail to the rack. Adjust the distance from the edge of the slide rail to the outside of the rack so that it meets the required specification.

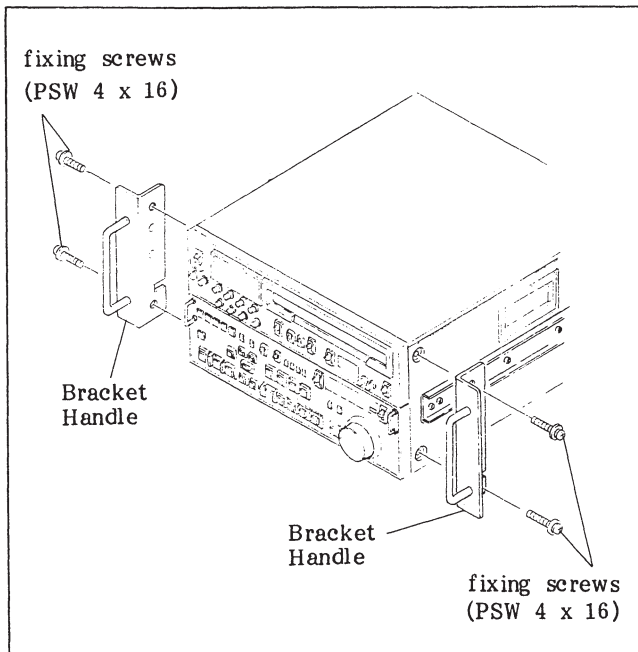


5. Remove the two fixing screws on the Right and Left Side Panels. (Be careful not to lose these four screws.)





6. Install the Handle Brackets with the supplied screws (PSW 4 x 16) for these brackets.



(NOTE) Never use screws (PSW 4 x 16) to install the Right and Left Side Panels. Be sure to install the Right and Left Side Panels with the screws (B 4 x 6) removed in Step (5). If using the screws (PSW 4 x 16) by mistake, may cause trouble in the unit.

- NOTE:**(1) When several units are mounted in a rack, it is recommended to install a fan for ventilation. Good air circulation is essential to prevent internal heat build-up in a rack (5 °C to 40 °C must be met for all units).
- (2) Never remove the Upper Panel and Lower Panels during rack mounting.
  - (3) Be sure to secure the rack to the floor to avoid accidents when the unit is pulled out.

## 1-9. SUPPLIED ACCESSORIES

Supplied accessories are as follows:

1. AC Power Code
2. 9-pin Remote Control Cable; RCC-5G
3. 12-pin Dubbing Cable
4. Extension Board; EX-116  
EX-134  
EX-151
5. Screws for Rack Mounting; PSW 4 x 16 (four)

## 1-10. OPTIONAL ACCESSORIES

The followings are provided as the optional accessories. Suitable accessories should be used for each system.

1. Rack Mount Kit (RMM-100)  
The rack mount kit is used to mount the unit with the rack mount kit, RMM-100, in a standard 19-inch rack.
2. Cleaning Cassette Tape (BCT-5CLN)
3. Remote Control Unit (BVR-75A)



## SECTION 2

### TECHNICAL INFORMATION

#### 2-1. SPECIFICATIONS

##### GENERAL

Power requirements	: AC 90 to 265 V, 48 to 64 Hz
Power consumption	: 240 W
Operating temperature	: +5°C to +40°C
Storage temperature	: -20°C to +60°C
Humidity	: Less than 80 %
Weight	: 30 Kg
Dimensions	: 427 x 237 x 520 mm (w/h/d)
Tape speed	: 118.6 mm/s
Record and playback time	: 90 minutes maximum (with a BCT-90ML cassette)
Fast forward/rewind time	: Less than 180 seconds (with a BCT-90ML cassette)
Search speed	
Shuttle mode	: Still, 1/30, 1/10, 1/5, 1/2, 1, 2, 5, and 24 times normal in forward and reverse directions.
Variable Memory mode	: Still, 1/30, 1/10, 1/5, 1/2, and 1 times normal in forward and reverse directions. 2 times normal in forward direction.
Jog mode	: Still to 1 in forward and reverse directions.
DT (Dynamic Tracking) range	: -1 to +2 times normal
Video cassette	: 1/2-inch, Betacam, and Betacam SP cassette for Beta format.
Metal particle tape	: BCT-5M/10M/20M/30M/ BCT-5ML/10ML/20ML/30ML/60ML/90ML or equivalent
Oxide tape	: BCT-5G/10G/20G/30G/ BCT-5GL/10GL/20GL/30GL/60GL/90GL or equivalent

## Video

### Recording System

Luminance FM

Chrominance FM (Compressed time division multiplex)

		Metal particle tape	Oxide tape
Band width	Luminance	30 Hz to 4.5MHz +0.5dB, -3.0 dB	30 Hz to 4.1 MHz + 0.5dB, -6.0 dB
	Chrominance	R-Y : 30 Hz to 1.5 MHz +0.5 dB, -3.0 dB B-Y : 30 Hz to 1.5 MHz +0.5 dB, -3.0 dB	
S/N	Luminance	More than 51 dB	More than 48 dB
	Chrominance AM PM	More than 53 dB More than 53 dB	More than 50 dB More than 50 dB
K-factor (2T pulse)		Less than 2 %	Less than 3 %
DG		Less than 2 %	Less than 3 %
DP		Less than 2°	Less than 3°
Y/C delay		Less than 20 ns	

## Audio

### Recording System

CH-1/2 Bias recording

CH-3/4 FM recording

		Metal particle tape	Oxide tape
Frequency response	CH-1/2	50 Hz to 15 kHz +1.0 dB, -2.0 dB	50 Hz to 15 kHz ±3 dB
	CH-3/4	20 Hz to 20 kHz +0.5 dB, -2.0 dB	_____
Dynamic range	CH-3/4	More than 85 dB	_____
Signal to noise ratio (at 3 % distortion level)	CH-1/2	More than 72 dB	More than 50 dB (DOLBY NR OFF)
Distortion (THD) (at reference level, 1 kHz)	CH-1/2	Less than 1 %	Less than 2 %
	CH-3/4	Less than 0.5 %	_____
Crosstalk (at 1 kHz 0VU)	CH-1/2	Less than -65 dB	
	CH-3/4	Less than -70 dB	_____
Phase reference	CH-1/2	±20° (15 kHz)	
	CH-3/4	±10° (20 kHz)	_____
Wow/flutter	CH-1/2	Less than 0.1 % rms	

Processor adjustment range

Video level	: ± 3 dB
Chroma level	: ± 3 dB
Setup level	: ±15 IRE
Hue	: ± 15°
System SC phase	: 360° p-p
System sync phase	: $\begin{smallmatrix} +3 \\ -1 \end{smallmatrix} \mu\text{s}$ (fine tuning range : 300 ns)
Y/C delay	: ± 50 ns

INPUT CONNECTOR

VIDEO INPUT

REF VIDEO	: BNC x 2 (loop through) 1.0 ± 0.3 Vp-p, 75 ohms, sync negative
VIDEO INPUT	: BNC x 2 (loop through) Composite video, 1.0 Vp-p, 75 ohms, sync negative
DUB/COMPONENT 1	: 12-pin multi connector (male) Luminance : 1.0 Vp-p, 75 ohms, sync negative Chrominance R-Y : 0.7 Vp-p, 75 ohms B-Y : 0.7 Vp-p, 75 ohms
COMPONENT 2	: BNC x 3 Y : 1.0 Vp-p, 75 ohms, sync negative R-Y : 0.7 Vp-p, 75 ohms B-Y : 0.7 Vp-p, 75 ohms

AUDIO INPUT

CH-1/CH-2/CH-3/CH-4	: XLR 3-pin x 4 (female) LOW : -60 dBm, 600 ohms (or 3k ohms), balanced HIGH : +4 dBm, 600 ohms (or 10k ohms), balanced
TIME CODE IN	: XLR 3-pin x 1 (female) 0.5 V to 18 Vp-p, 10k ohms, balanced

The video input/output signal level indicates a 100/7.5/77/7.5 color-bar signal.

OUTPUT CONNECTOR

VIDEO OUTPUT

REF VIDEO	: BNC x 2 Black burst, 75 ohms, sync negative (286 mV)
VIDEO OUTPUT 1/2/3	: BNC x 3 Composite video, 1.0 Vp-p, 75 ohms, sync negative By setting the internal board switch, non-composite video (0.714Vp-p, 75 ohms) can be output from the VIDEO OUTPUT 2 connector, and time code and other information can be superimposed on the signal output from VIDEO OUTPUT 3 connector.
DUB/COMPONENT 1	: 12-pin multi (female) Luminance : 1.0 Vp-p, 75 ohms, sync negative Chrominance R-Y : 0.7 Vp-p, 75 ohms B-Y : 0.7 Vp-p, 75 ohms
COMPONENT 2	: BNC x 3 Y : 1.0 Vp-p, 75 ohms, sync negative R-Y : 0.7 Vp-p, 75 ohms B-Y : 0.7 Vp-p, 75 ohms

AUDIO OUTPUT

CH-1/CH-2/CH-3/CH-4	: XLR 3-pin x 4 (male) +4 dBm (600-ohm load), low impedance, balanced
SELECTED	: XLR 3-pin x 2 (male) +4 dBm (600-ohm load), low impedance, balanced
MONITOR	: 8-pin multi (female) VIDEO : 1.0 Vp-p, 75 ohms, sync negative AUDIO :-5 dBs, 47k ohms, unbalanced
TIME CODE OUT	: XLR 3-pin (male) 2.2 Vp-p, 600 ohms, balanced
HEADPHONES	: Stereophone jack Max -14 dBs, 8 ohms

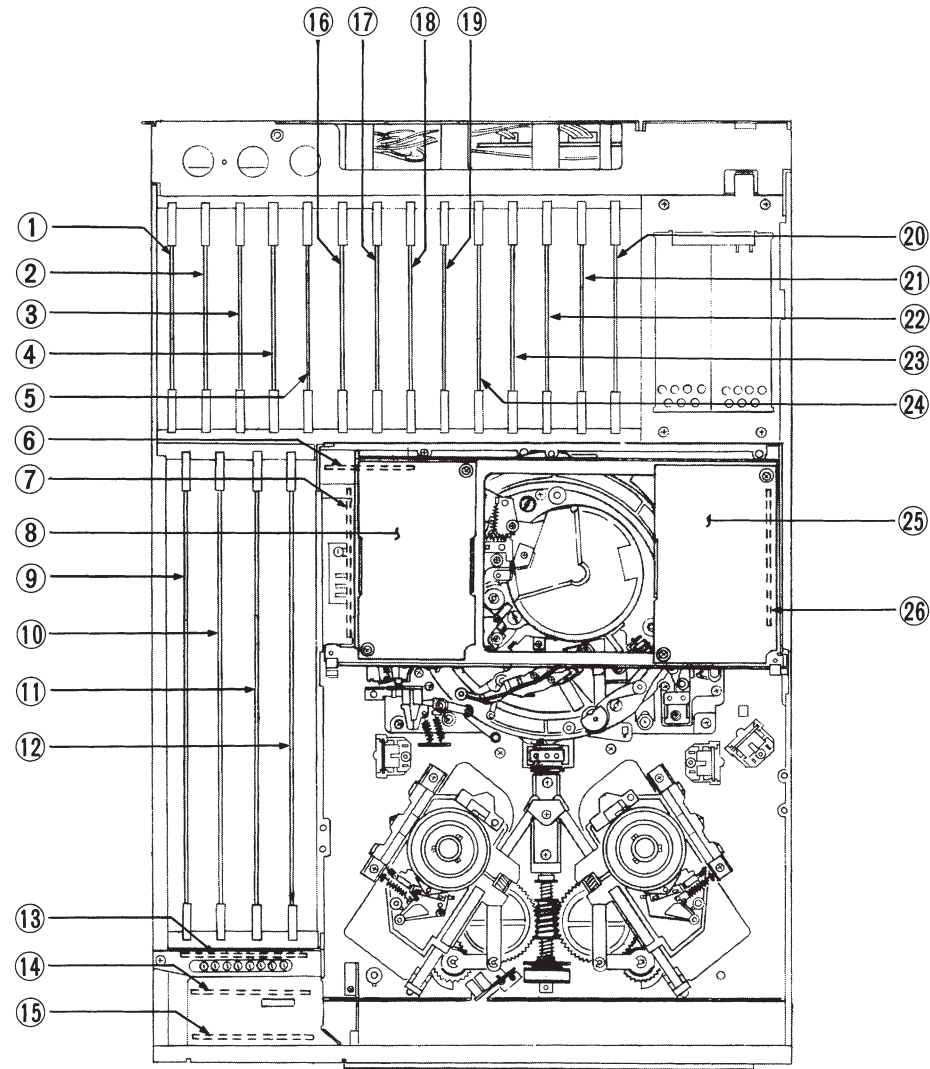
REMOTE CONNECTOR

TBC REMOTE	: 15-pin multi (male)
REMOTE 1-IN	: 9-pin multi (female)
REMOTE 1-OUT	: 9-pin multi (female)
REMOTE 2	: 36-pin multi (female)

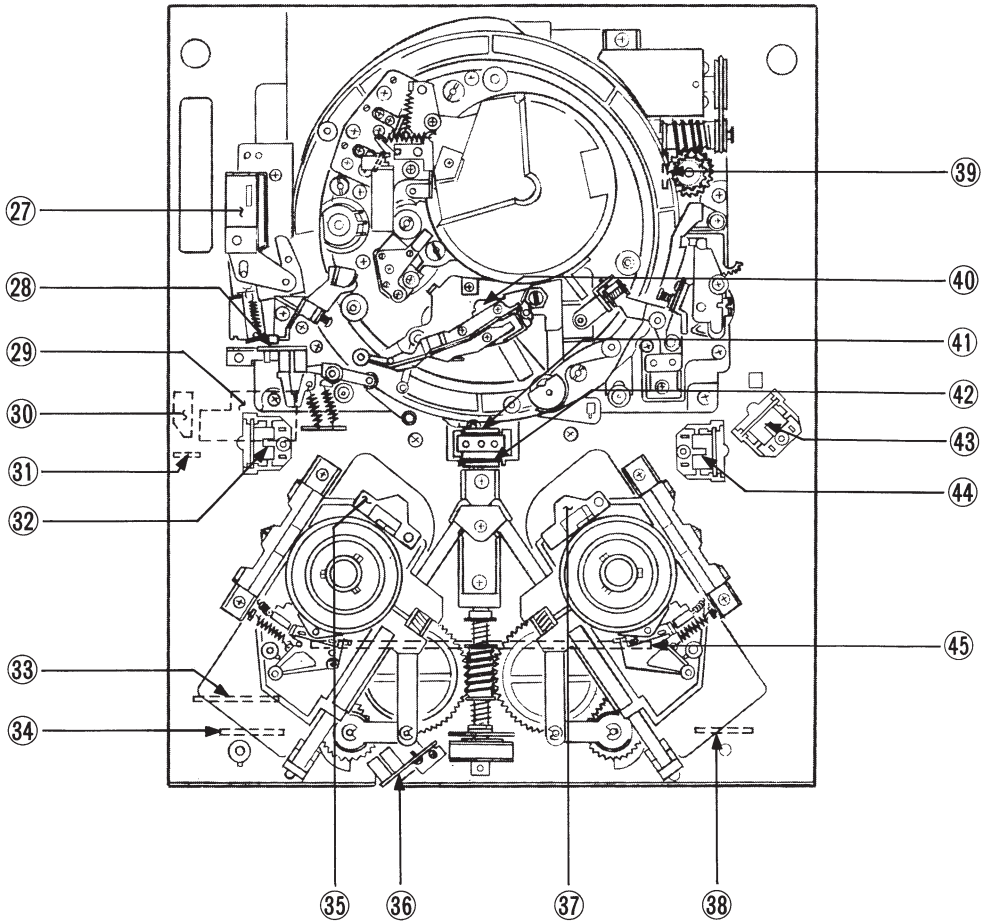
2-2. LOCATION OF THE PRINTED CIRCUIT BOARDS

TOP VIEW

TOP VIEW



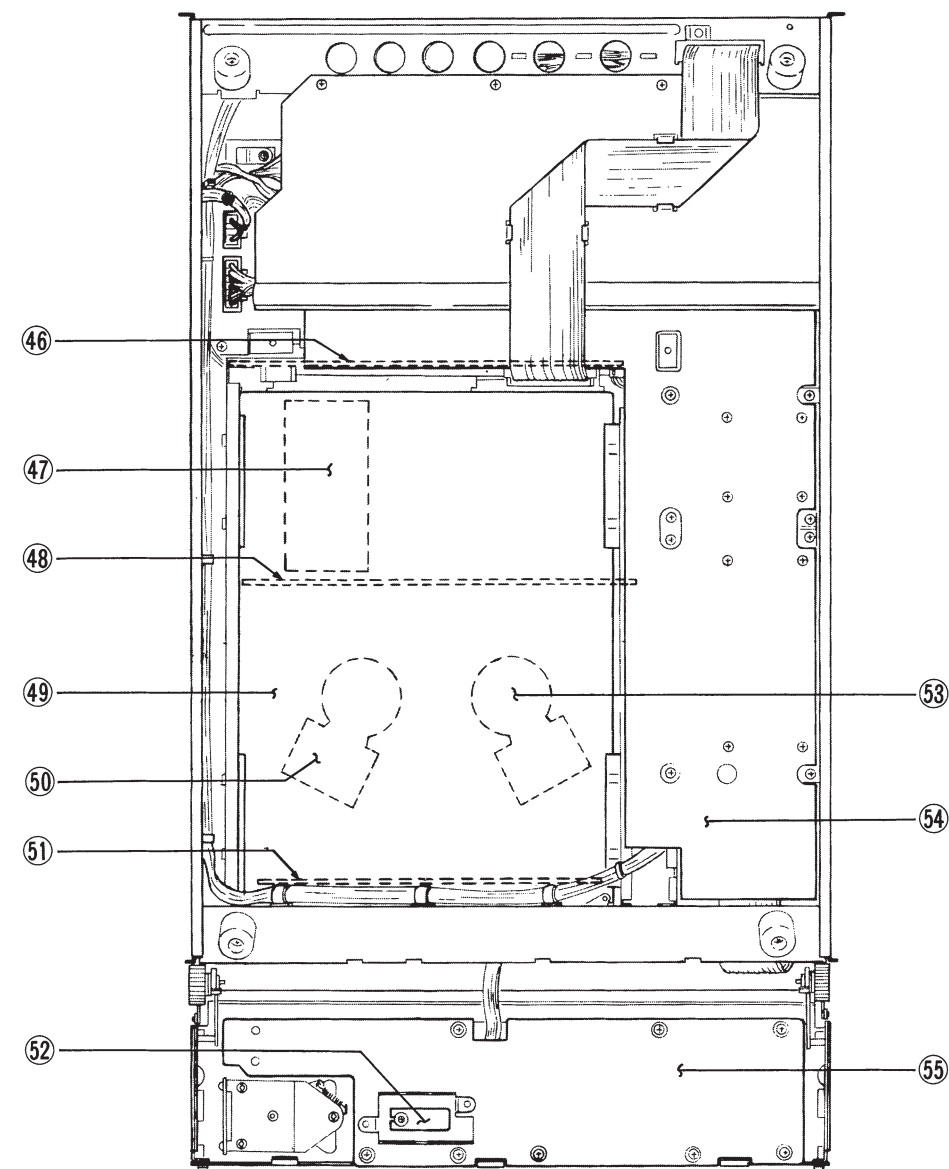
- |                   |                |                   |
|-------------------|----------------|-------------------|
| ① TBC-9 Board     | ⑩ TBC-7 Board  | ⑲ TC-40 Board     |
| ② EN-48 Board     | ⑪ DM-56 Board  | ⑳ DT-14 Board     |
| ③ VO-18 Board     | ⑫ DEC-42 Board | ㉑ DT-13 Board     |
| ④ MD-46 Board     | ⑬ BF-28 Board  | ㉒ SV-84 Board     |
| ⑤ DEC-27 Board    | ⑭ DP-73 Board  | ㉓ SV-83 Board     |
| ⑥ RE-34 Board     | ⑮ DP-74 Board  | ㉔ SV-82 Board     |
| ⑦ DT-15 Board     | ⑯ AFM-1 Board  | ㉕ RP-29 (Y) Board |
| ⑧ RP-29 (C) Board | ⑰ AU-75 Board  | ㉖ SE-57 Board     |
| ⑨ TBC-8 Board     | ⑱ AU-76 Board  |                   |



- |   |   |
|---|---|
| ㉗ PD-35 Board                           | ㉞ PTC-21 Board                          |
| ㉘ PTC-15 Board                          | ㉟ DE-15 Board                           |
| ㉙ CL-14 Board (Cassette-up Compartment) | ㊱ PC-41 Board (Cassette-up Compartment) |
| ㉚ PC-33 Board (Cassette-up Compartment) | ㊲ PTC-31 Board                          |
| ㉛ PC-33 Board (Cassette-up Compartment) | ㊳ TR-18 Board                           |
| ㉜ PTC-23 Board                          | ㊴ PTC-20 Board                          |
| ㉝ PC-47 Board (Cassette-up Compartment) | ㊵ PTC-36 Board                          |
| ㉞ PC-41 Board (Cassette-up Compartment) | ㊶ PTC-23 Board                          |
| ㉟ DE-15 Board                           | ㊷ CL-24 Board (Cassette-up Compartment) |
|   | (Serial No. 15552 and higher)           |

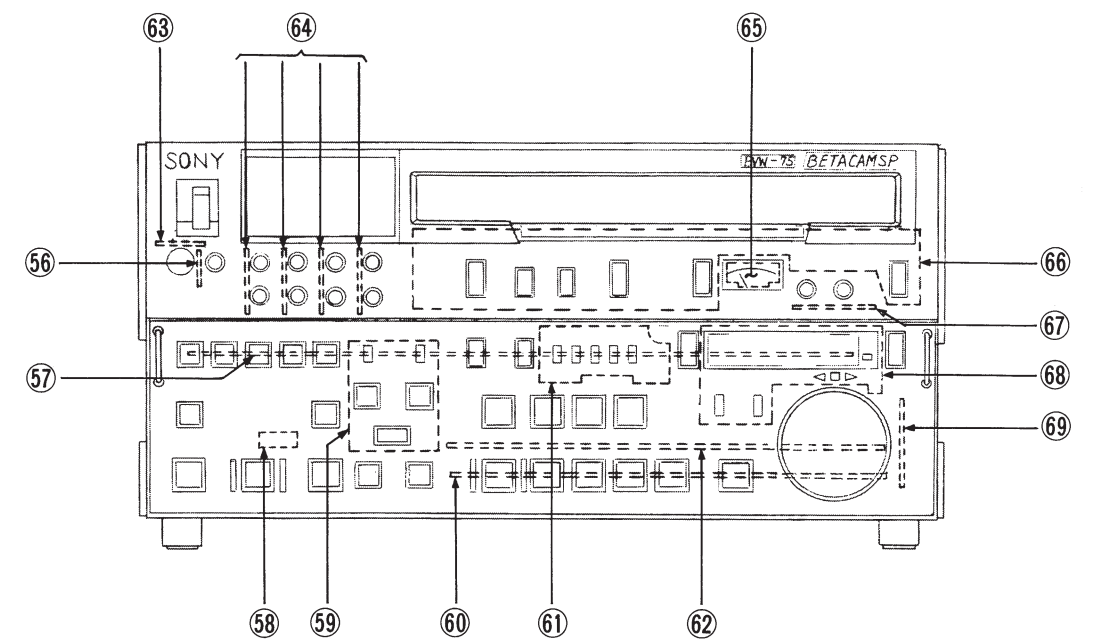


**BOTTOM VIEW**

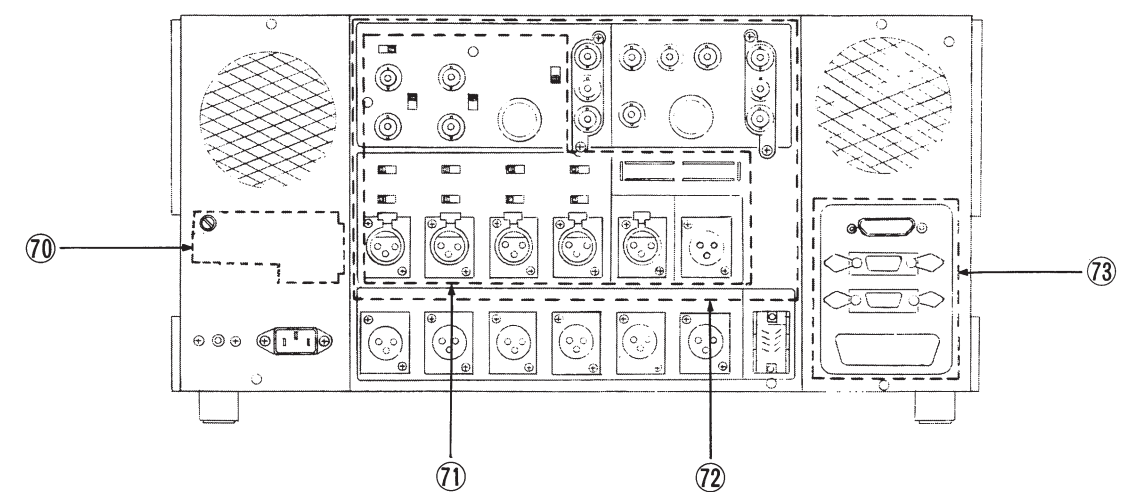


- ④⑥ MB-117 Board
- ④⑦ RE-28 Board
- ④⑧ DR-56 Board
- ④⑨ SY-61 Board
- ⑤⑩ RM-40 Board
- ⑤⑪ RE-36 Board
- ⑤⑫ PT-9 Board
- ⑤⑬ RM-40 Board
- ⑤⑭ MB-116 Board
- ⑤⑮ KY-96 Board

**FRONT VIEW**



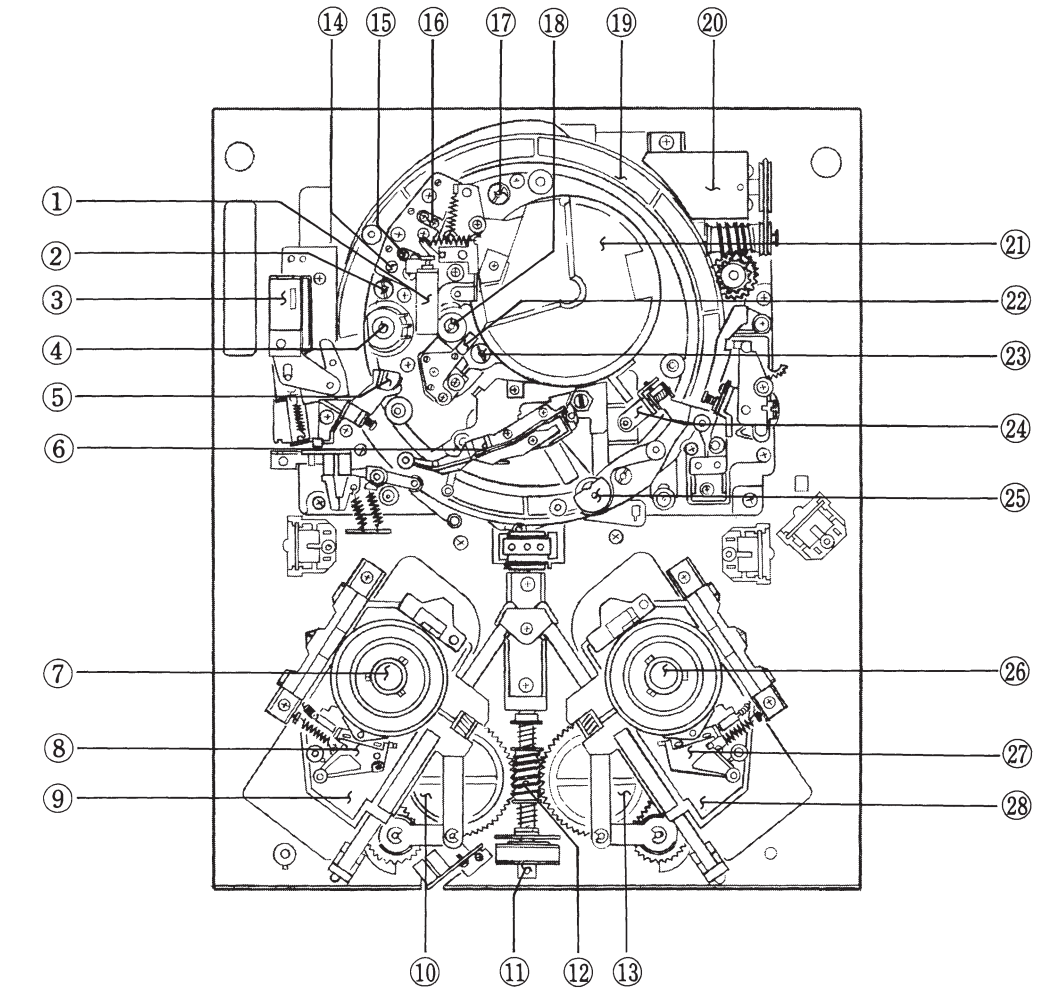
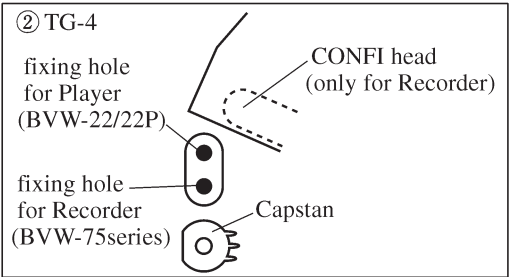
**REAR VIEW**



- |                 |                 |                         |
|-----------------|-----------------|-------------------------|
| ⑤⑥ HP-33 Board  | ⑥③ VR-62 Board  | ⑦⑩ AC-96 Board          |
| ⑤⑦ CP-103 Board | ⑥④ VR-42 Board  | ⑦⑪ CP-101 Board         |
| ⑤⑧ HC-11 Board  | ⑥⑤ DP-72 Board  | ⑦⑫ CP-111/CP-161A Board |
| ⑤⑨ KY-107 Board | ⑥⑥ SW-144 Board | ⑦⑬ RM-48 Board          |
| ⑥⑩ SY-61 Board  | ⑥⑦ VR-61 Board  |                         |
| ⑥⑪ KY-108 Board | ⑥⑧ DP-71 Board  |                         |
| ⑥⑫ SY-64 Board  | ⑥⑨ PTC-32 Board |                         |

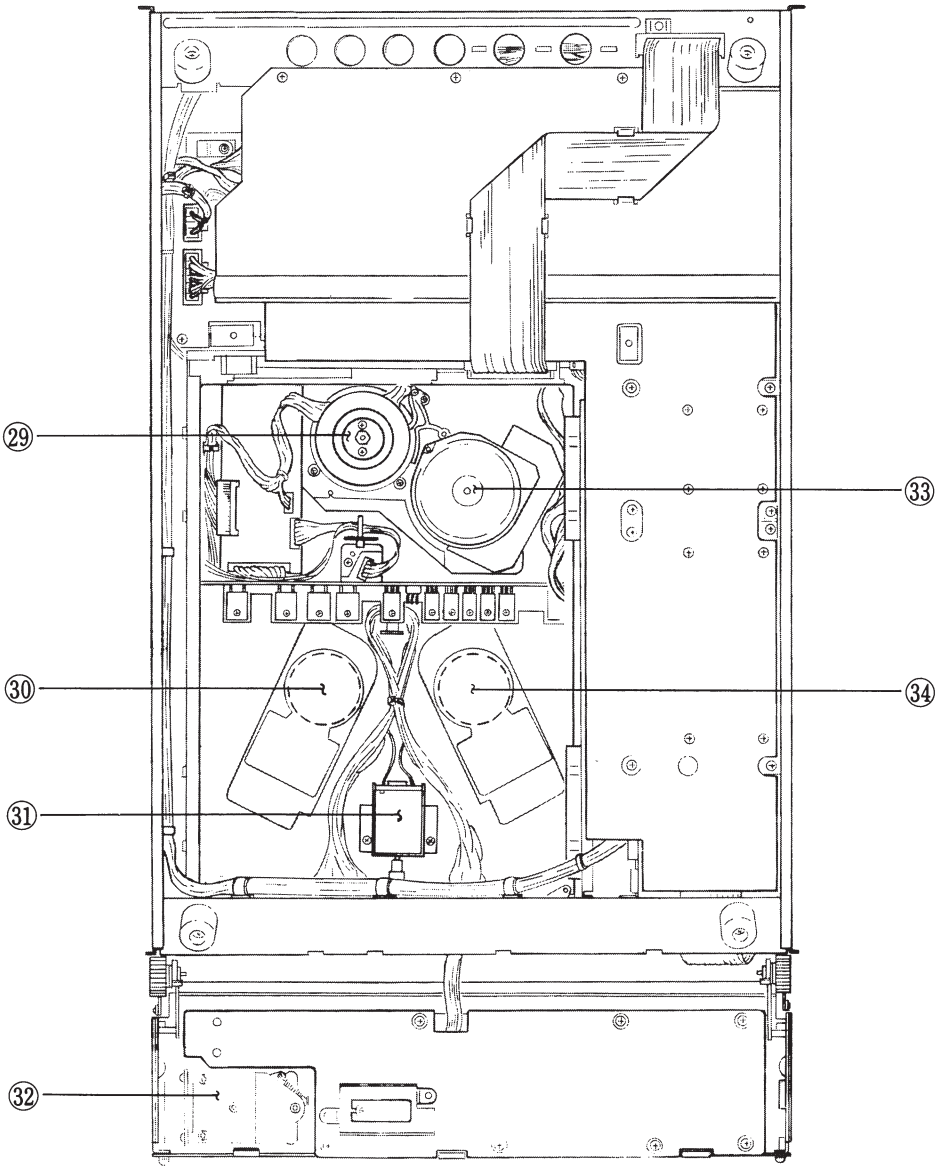
2-3. LOCATION OF THE MAIN MECHANICAL PARTS/COMPONENTS

TOP VIEW



- |                         |                         |                       |
|-------------------------|-------------------------|-----------------------|
| ① Cleaning Roller Block | ⑪ Timing Pulley         | ⑳ Head Drum           |
| ② TG-4                  | ⑫ Worm Gear             | ㉑ CTL Head            |
| ③ Pinch Solenoid        | ⑬ Take-up Worm Wheel    | ㉒ TG-2                |
| ④ Capstan Shaft         | ⑭ AT Head Block         | ㉓ T Drawer Arm        |
| ⑤ Full Erase Head       | ⑮ Audio Confidence Head | ㉔ Pinch Roller        |
| ⑥ S Tension Regulator   | ⑯ Audio/TC Head         | ㉕ Take-up Reel Table  |
| ⑦ Supply Reel Table     | ⑰ TG-3                  | ㉖ Take-up Brake Ass'y |
| ⑧ Supply Brake Ass'y    | ⑱ TG-1                  | ㉗ Take-up Motor Plate |
| ⑨ Supply Motor Plate    | ㉙ Threading Ring        |                       |
| ⑩ Supply Worm Wheel     | ㉚ Gear Box              |                       |

BOTTOM VIEW

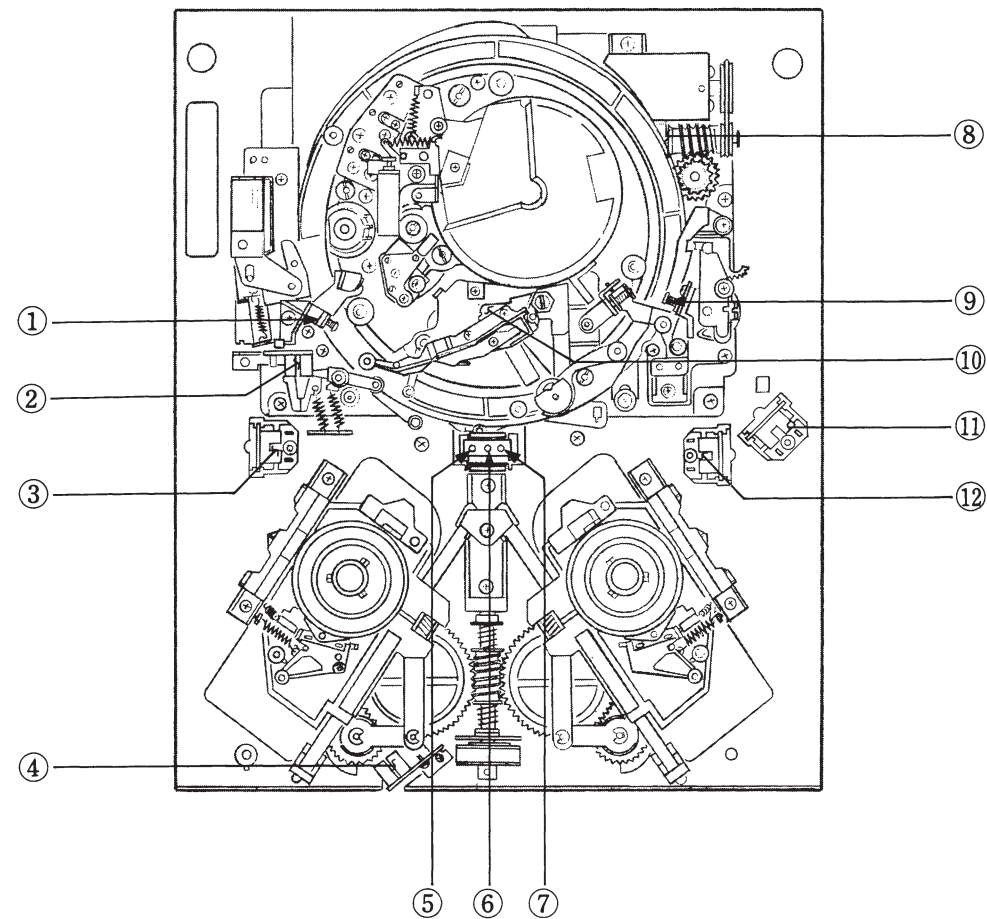


- |                       |
|-----------------------|
| ㉙ Drum                |
| ㉚ Take-up Reel Motor  |
| ㉛ Reel Transfer Motor |
| ㉜ Search Dial Block   |
| ㉝ Capstan Motor       |
| ㉞ Supply Reel Motor   |



2-4. LOCATION OF THE SENSORS

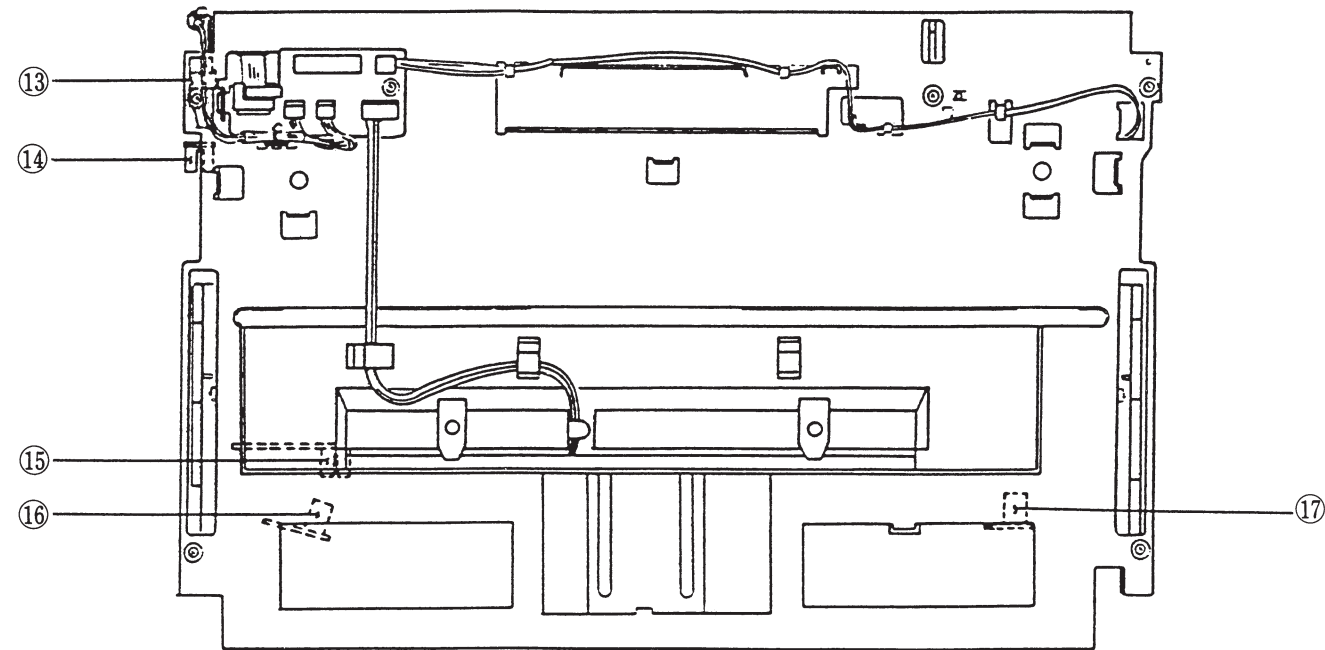
TOP VIEW



- |  |   |
|--|---|
| ① Tape End Sensor                                      | ⑦ Video Tape Thickness Detection Switch       |
| ② Ring Sensor  | ⑧ Threading Speed Detection Sensor            |
| ③ S Cassette MISS-REC Switch (for metal particle tape) | ⑨ Tape Beginning Sensor                       |
| ④ Reel Table L/S Position Detection Sensor             | ⑩ Tape Tension Sensor                         |
| ⑤ Reel Hub Diameter Detection Switch                   | ⑪ L Cassette MISS-REC Switch                  |
| ⑥ Oxide/Metal Particle Tape Detection Switch           | ⑫ S Cassette MISS-REC Switch (for oxide tape) |

\* The "S cassette" or "small cassette" described in the Maintenance Manual indicates a standard cassette.

TOP VIEW OF THE CASSETTE-UP COMPARTMENT



- |                                      |
|--------------------------------------|
| ⑬ Cassette-down Switch (2)           |
| ⑭ Cassette-down Switch (1)           |
| ⑮ Cassette L/S Size Detection Switch |
| ⑯ Cassette-in Switch (L)             |
| ⑰ Cassette-in Switch (R)             |

2-5. FUNCTIONS OF THE SENSORS AND CASSETTE TAB

2-5-1. Function of the Sensors

1. Reel Table L/S Position Detection Sensor  
(Sec. 2-4- ④ )

. The sensor detects whether the Reel Table moves to the correct position according to the size of the inserted cassette.
2. Ring Sensor  
(Sec. 2-4 ② )

. The sensor detects whether the Threading Ring reaches the THREAD END or UNTHREAD END position.
3. Tape Tension Sensor  
(Sec. 2-4- ⑩ )

. During recording or playback, a tension arm is activated to keep a constant tape tension at the drum entrance. The Tape Tension Sensor detects the position of the tension arm.
4. Threading Speed Detection Sensor  
(Sec. 2-4- ⑧ )

. During threading, the Threading Ring rotation speed is controlled using a servo circuit to protect the tape from damage. The Threading Ring rotation speed is detected using the Threading Speed Detection Sensor installed into the Gear Box Block.
5. S Cassette Miss-REC Switch  
(Sec. 2-4- ③ )  
(for metal particle tape)

. This is a record-proof switch for the small cassette for metal particle tape.
6. Reel Hub Diameter Detection Switch  
(Sec. 2-4- ⑤ )

. The reel hub diameter varies depending on the length of the tape wound on a cassette. The diameter is detected using the Reel Hub Diameter Detection Switch. The resultant data is sent to the servo circuit.
7. Oxide/Metal Particle Tape Detection Switch  
(Sec. 2-4- ⑥ )

. This switch detects whether an oxide tape or a metal particle tape is being used.
8. Video Tape Thickness Detection Switch  
(Sec. 2-5- ⑦ )

. This switch detects the thickness of the video tape wound on a cassette.
9. S Cassette Miss-REC Switch (for oxide tape)  
(Sec. 2-4- ⑫ )

. This is a record-proof switch for the small cassette for oxide tape.
10. L Cassette Miss-REC Switch (for Oxide and Metal Tapes)  
(Sec. 2-4- ⑪ )

. This is a record-proof switch for the large cassette of Oxide and Metal tapes.
11. Cassette L/S Size Detection Switch  
(Sec. 2-4- ⑮ )

. This switch detects whether the inserted cassette is large or small.
12. Cassette-in Switch (L)/Cassette-in Switch (R)  
(Sec. 2-4- ⑯ , ⑰ )

. This switch detects whether a cassette is being inserted.
13. Cassette-down Switch (1)  
(Sec. 2-4- ⑭ )

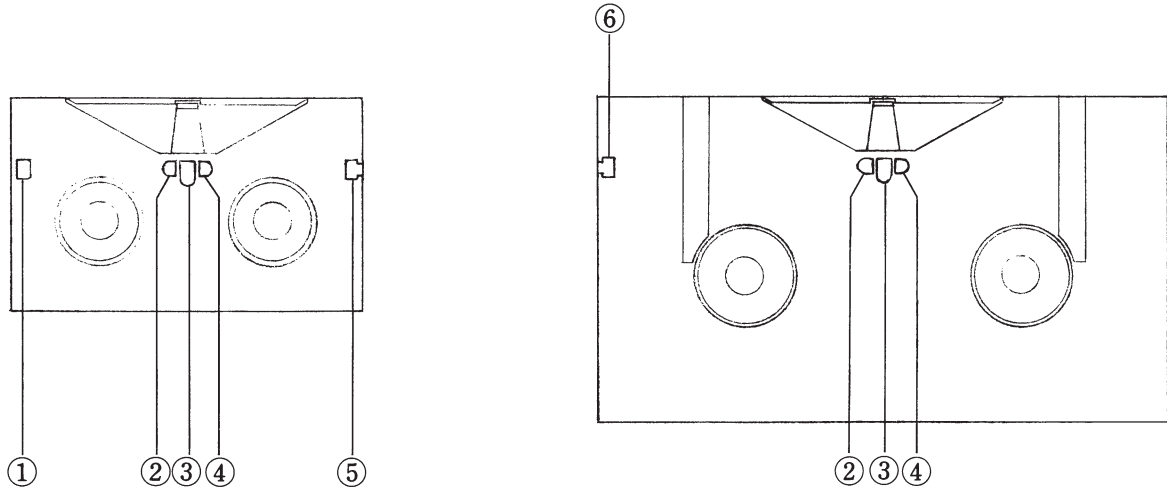
. This switch detects whether a cassette is inserted and the Cassette-up Compartment goes down.

. It detects whether the Cassette-up Compartment goes up in the EJECT mode.
14. Cassette-down Switch (2)  
(Sec. 2-4- ⑬ )

. This switch checks whether the Reel Table moves to the correct position according to the size of the inserted cassette.

2-5-2. Function of the Cassette Plug and Tab

As shown in the figure below, plugs and tabs are provided at the back of the video cassette.



- ① Small cassette's miss-REC (for Oxide tape)
- ② Vide tape thickness detection
- ③ Oxide/Metal tape detection
- ④ Reel hub diameter detection
- ⑤ Small cassette's miss-REC (for Metal tape)
- ⑥ Large cassette's miss-REC

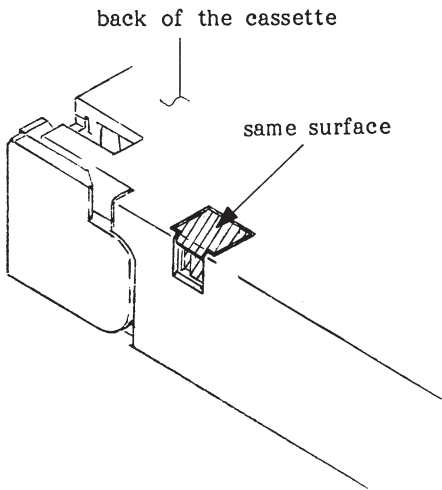


Fig. 1

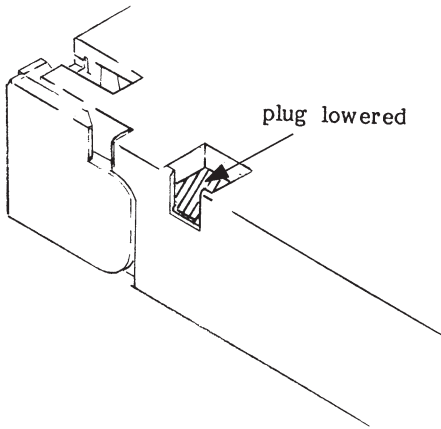


Fig. 2

The presence or absence of these tabs determines the cassette status as shown in the table below.

Plug and tab	Cassette status with plugs and tabs	Cassette status without plugs and tabs
Small cassette miss-REC (for oxide tape)	Can be recorded.	Cannot be recorded. * When recording is required, cover the former location of the tab with vinyl tape.
Small cassette miss-REC (for metal particle tape)	Can be recorded (the plug is located on the same surface as the back of the cassette) (refer to Fig. 1).	Cannot be recorded (the plug is lower than the back of the cassette) (refer to Fig. 2). * When recording is required, raise the plug.
Large cassette miss-REC	Can be recorded (the plug is located on the same surface as the back of the cassette) (refer to Fig. 1).	Cannot be recorded (the plug is lower than the back of the cassette) (refer to Fig. 2). * When recording is required, raise the plug.
Tape thickness	A 20 $\mu$ m thick tape is wound on the cassette.	A 15 $\mu$ m thick tape is wound on the cassette.
Oxide/Metal tape detection	An oxide tape is wound on the cassette.	A metal particle tape is wound on the cassette.
Reel hub diameter	For small hub	For large hub

## 2-6. PRINTED CIRCUIT BOARDS

The circuit information is provided below.

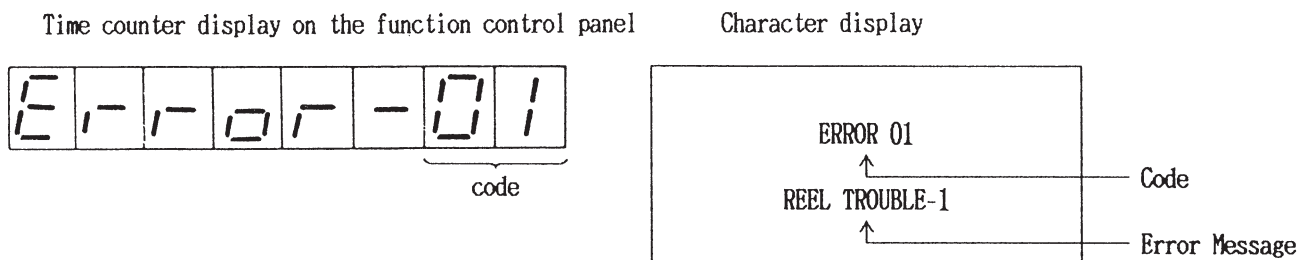
System	Board	Circuit function	System	Board	Circuit function
VIDEO	DEC-27	Y/C Separator	AUDIO	VR-62	Headphones Level Volume
	DEC-42	C Decoder, C Compressor, Y Selector		DP-74	Audio Level Meter
	CF-36	Color Framing Detector		DP-73	DC-AC/DC Converter
	DUS-273	R-Y Clamp Level Adj.		SW-144	Select Switch/Display
	MD-46	Y/C Modulator		DP-72	Video/RF Meter LED
	RP-29(Y)	Y REC/PB Amplifier		VR-61	Video/Tracking Control Volume
	RP-29(C)	C REC/PB Amplifier	SERVO	SV-82	Microcomputer
	DM-56	Y/C Demodulator		SV-83	Reel Servo
	TBC-7	Time Base Corrector		SV-84	Capstan/Drum Servo
	TBC-8	Time Base Corrector		RE-28	Capstan/Drum Motor Driver
	NR-25	Y Digital Noise Reduction		PTC-20	Cassette Detector (Tape Thickness, Reel Hub Diameter, Metal/Oxide)
	TBC-9	Time Base Corrector		PTC-21	Reel Table Position Detector
	EN-48	C Encoder		PTC-23	REC Inhibit Detector
	VO-18	Video Output		PTC-36	Cassette Detector (Tape Thickness, Reel Hub Diameter, Metal/Oxide)
	DUS-270	Squelch Buffer		DR-56	Drum Error Amplifier, Capstan/Reel Motor Driver
	RE-34	Rotary Erase		RE-36	Reel Motor Driver
	CP-103	Sub Control Panel		RM-40	Reel Motor
	CP-101	Video/Audio Input		DE-15	Reel Motor FG
AUDIO	BF-28	Audio Buffer/Level Detector		SE-57	Threading Motor Control
	VR-42	Audio REC/PB Volume		PTC-31	Threading Motor FG
	AU-75	LNG Audio REC/PB Amplifier		TR-18	Tape Tension Sensor
	AU-76	LNG Audio Head Amplifier, Bias Oscillator		DT-13	Dynamic Tracking
	AFM-1	AFM Audio Modulator/Demodulator		DT-14	Dynamic Tracking
	FL-61	Low-Pass Filter		DUS-282	Strain Gage Buffer
	CP-111	Audio Output Amplifier/Driver		DT-15	Dynamic Tracking
	CP-113	Audio Balanced Amplifier			
	HP-33	Headphones Amplifier/Jack			

System	Board	Circuit function
SYSTEM CONTROL	SY-61	System Control
	SY-64	Time Code Reader/ Generator
	RM-48	Remote Connector
	PD-35	Pinch/Cleaning Solenoid
	PTC-15	Thread/Unthread End Sensor
	CL-14	Cassette-up Compartment
	CL-24*1	Cassette-up Compartment LED
	PC-47	Large/Small Cassette Detector
	PC-33	Cassette Down Detector
	PC-41	Cassette In Detector
	CCM-2	Up/Down Motor
	HC-11	Hours Meter
	KY-96	Keyboard
	KY-107	Keyboard
	KY-108	Keyboard
	PTC-32	Search Dial
	DP-71	Time Counter Display
	PT-9	Power Transistor
	TC-40	LTC REC/PB Amplifier, Erase Driver
OTHERS	AC-96	Relay Board of AC Inlet
	C1	Switching Regulator
	C2	Switching Regulator
	M1	Switching Regulator
	M2	Switching Regulator
	MB-116	Mother Board
	MB-117	Mother Board
	EX-116	Extension Board
	EX-134	Extension Board
	EX-151	Extension Board

\*1...Serial No. 15552 and higher

## 2-7. SELF DIAGNOSIS FUNCTION

The unit has a self diagnosis to isolate the troubles described below. When the troubles are detected, an error message is displayed on the function control panel's time counter display and monitor television. (To display the error message on the monitor television, connect a monitor television to the VIDEO OUT-3 connector on the connector panel and set the CHARACTER ON/OFF switch on the SY-61 board to on.)

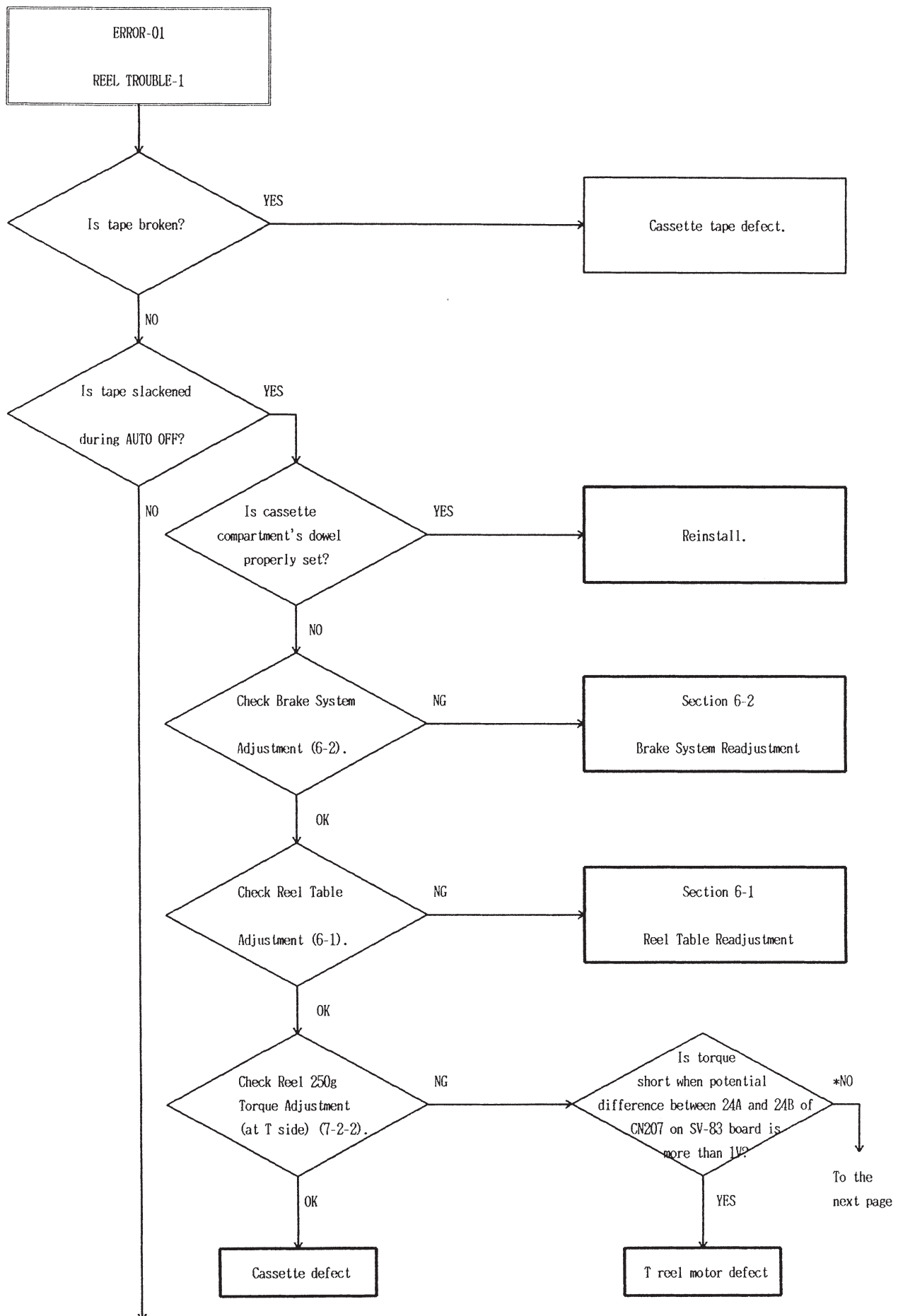


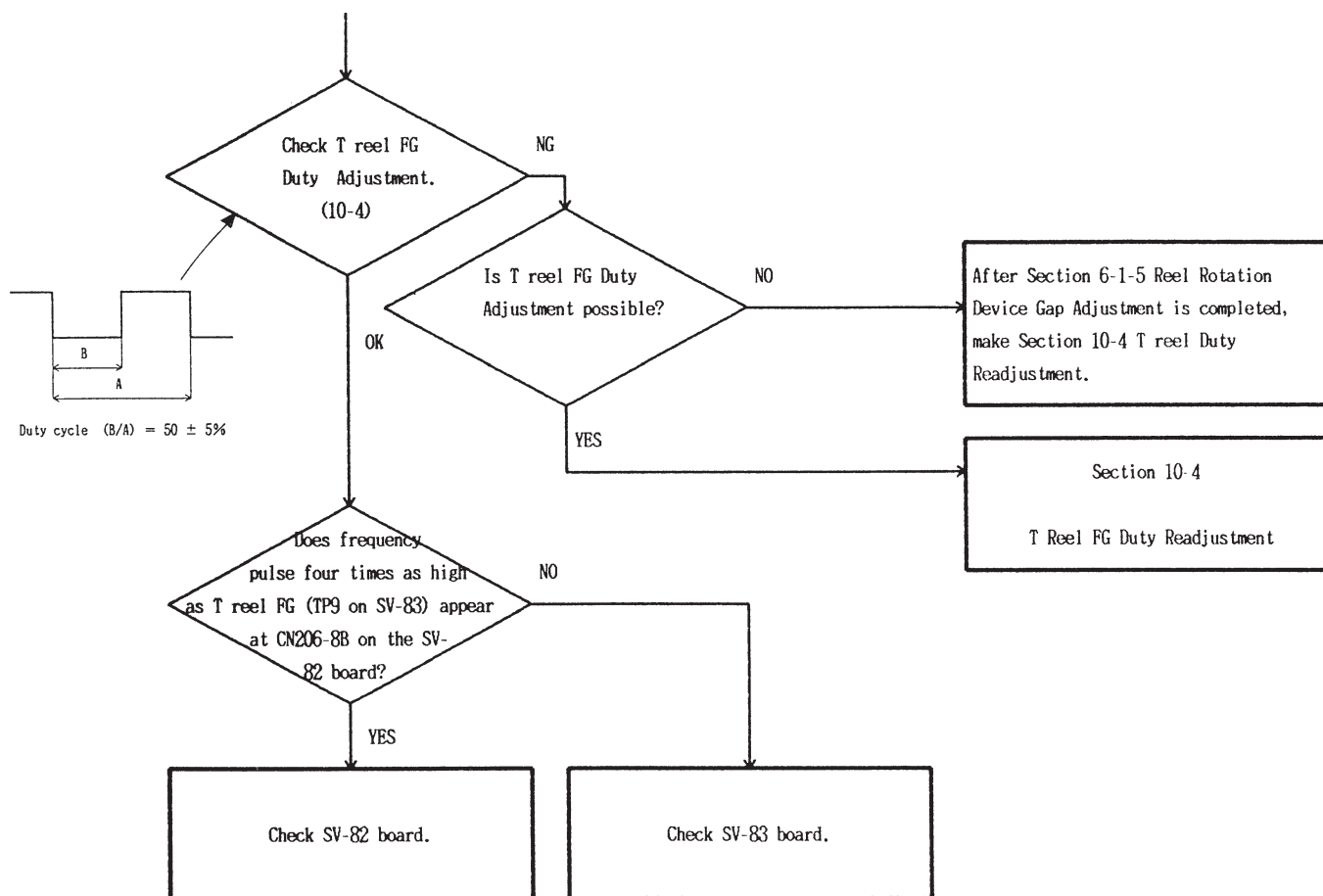


Code	Error message	Description	Detection
01	REEL TROUBLE-1	When tape slacking is detected during unthreading or tape breaking is detected during threading, tape protection operation is done and this message is displayed.	Detected when the ratio of the FG frequency at a take-up reel and threading ring is less than the specified value.
02	REEL TROUBLE-2	When tape breaking is detected in REC, SEARCH, F.FWD, and REW modes, tape protection operation is done and this message is displayed.	Detected when the ratio of the FG frequency at a supply reel and take-up reel is less than the specified value.
03	REEL TROUBLE-3	When tape breaking is detected or either of the locked supply or take-up reel is detected, tape protection operation is done and this message is displayed.	Detected when the ratio of the FG frequency at a supply or take-up reel is zero (0), or when the tension detected from a tension sensor is less than 15g.
04	REEL TROUBLE-4	When the tape does not run at the speed designated in F.FWD and REW modes, tape protection operation is done and this message is displayed.	Detected when the tape speed using the FG frequency at supply and take-up reels is compared with the designated speed.
05	REEL TROUBLE-5	Detected when the supply and take-up reels cannot be stopped with the cassette not inserted.	Detected using the FG frequency at supply and take-up reels.
06	TAPE TENSION ERROR	When excessive tension is detected, tape protection operation is done this message is displayed.	Detected when the tension detected from a tension sensor is more than 55g.
07	CAPSTAN TROUBLE	When the tape does not run at the speed designated in PLAY and SEARCH modes, tape protection operation is done and this message is displayed.	Detected at the tape speed detected from the FG frequency at a capstan motor.
08	DRUM TROUBLE	When drum motor rotation is not normal, tape protection operation is done and this message is displayed.	Detected when the drum speed obtained from the drum motor's phase PG and speed PG is less than the specified value or when the drum servo is not locked for more than the specified time.
09	TH/UNTH MOTOR TIME OUT	When threading or unthreading is not completed, tape protection operation is done and this message is displayed.	Detected when threading or unthreading is not completed within ten seconds after it is started.
0A	THREADING TROUBLE	When threading cannot be done, tape protection operation is done and this message is displayed.	Detected when the FG frequency at a take-up reel cannot be detected during threading or the tape beginning sensor is activated after the short FF mode is automatically entered three times.
10	H U M I D	Displayed when humid condensation is detected.	Detected using a condensation sensor.
11	TAPE BEGINNING/END SENSOR	Displayed when the tape beginning and end sensor operation is defective.	Detected when the tape beginning and end are detected at the same time.
12	TAPE BEGINNING SENSOR TROUBLE	Displayed when the tape beginning sensor operation is defective.	Detected when the tape beginning continues for more than seven seconds.
13	TAPE END SENSOR TROUBLE	Displayed when the tape end sensor operation is defective.	Detected when the tape end continues for more than seven seconds.

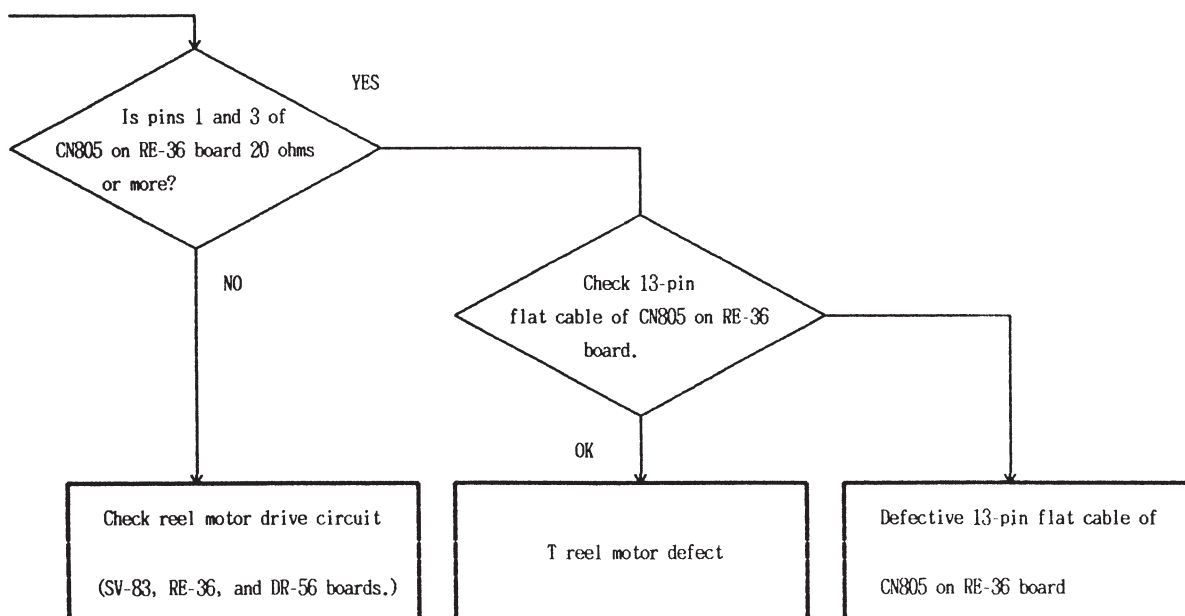
Code	Error message	Description	Detection
14	FAN MOTOR TROUBLE	Displayed when the operation of the fan motor on the connector panel is defective.	Detected according to the period of a ripple noise at the fan motor terminal.
20	C A S S E T T E C O M P A R T M E N T M O T O R L O C K	When cassette up/down operation is not completed, tape protection is done and this message is displayed.	Detected when cassette up/down operation is not completed within four seconds after it is started.
21	REEL TABLE MOTOR LOCK TROUBLE	When driving of L to S or S to L in the reel table is not completed, tape protection operation is done and this message is displayed.	Detected when reel table driving is not completed within four seconds after it is started.
22	REEL TABLE SENSOR TROUBLE	Displayed when reel table's L/S position detection sensor operation is defective.	Detected when the large and small positions are detected at the same time.
23	THREADING RING SENSOR TROUBLE	Displayed when defects occur in the threading ring's position detection.	Displayed when defects occur in the threading ring's position detection.
90	KEY INTERFACE ERROR-1	Displayed when the interface between the keyboard and system control is defective.	Detected when no interface signal is sent from the system control to the keyboard.
92	SERVO INTERFACE ERROR-1	Displayed when the interface between the keyboard and system control is defective.	Detected when no interface signal is sent from the servo system to the system control.
92	SERVO INTERFACE ERROR-2	Displayed when the interface between the keyboard and system control is defective.	Detected when no interface signal is sent from the system control to the servo system.
94	TC BOARD INTERFACE ERROR	Displayed when the interface between the REC timing control microcomputer and system control on the TC-40 board is defective.	Detected when the interface signal sent from the REC timing control microprocessor to the system control is defective.
95	SY CPU INTERFACE ERROR	Displayed when the interface between CPU1 and CPU2 on the SY-61 board is defective.	Detected when data is not receive or sent properly between CPU1 and CPU2 during power on sequence.
96	NV-RAM TROUBLE	Displayed when a defective NV-RAM is detected on the SY-61 board.	Detected by the NV-RAM data's checksum.

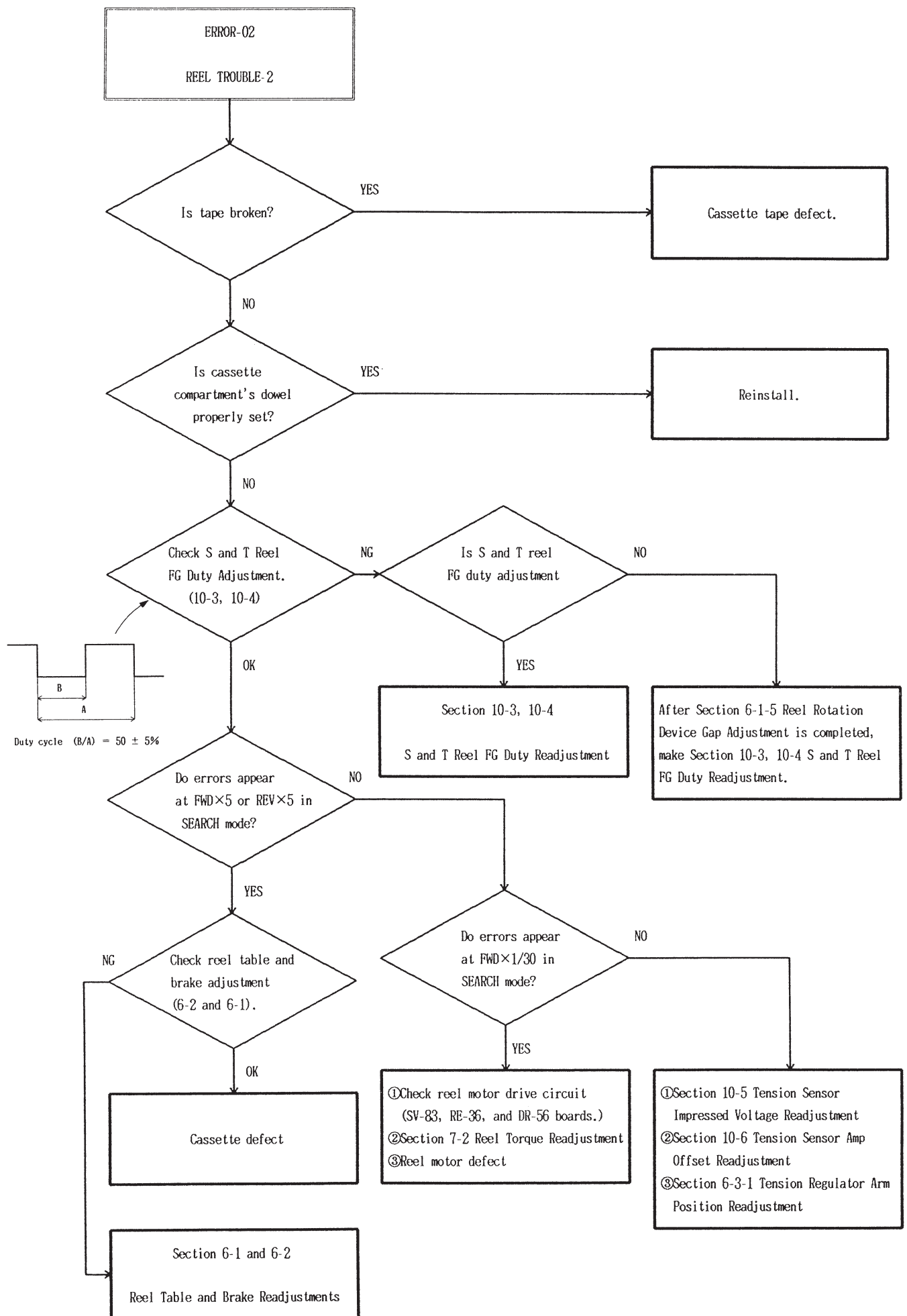


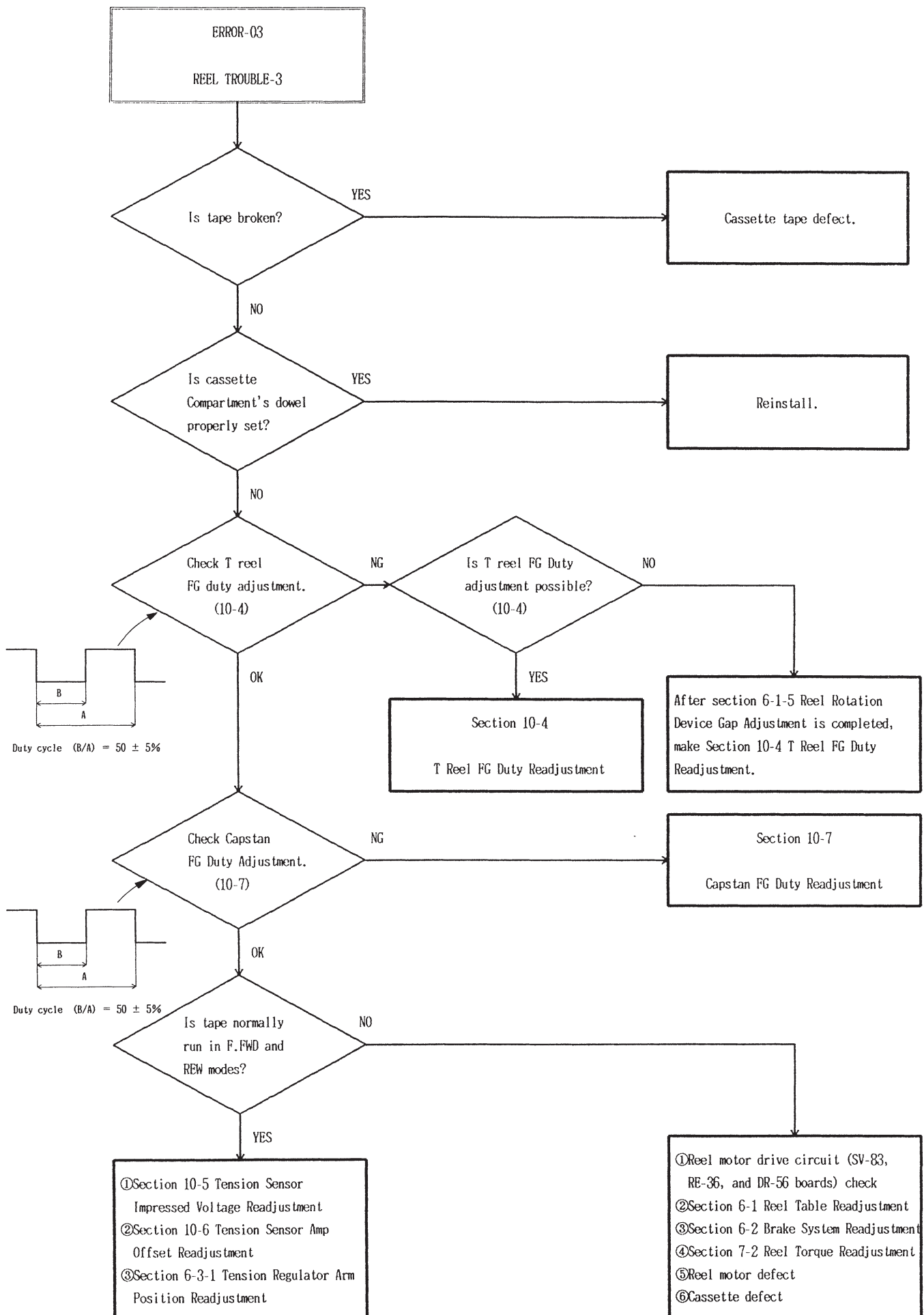


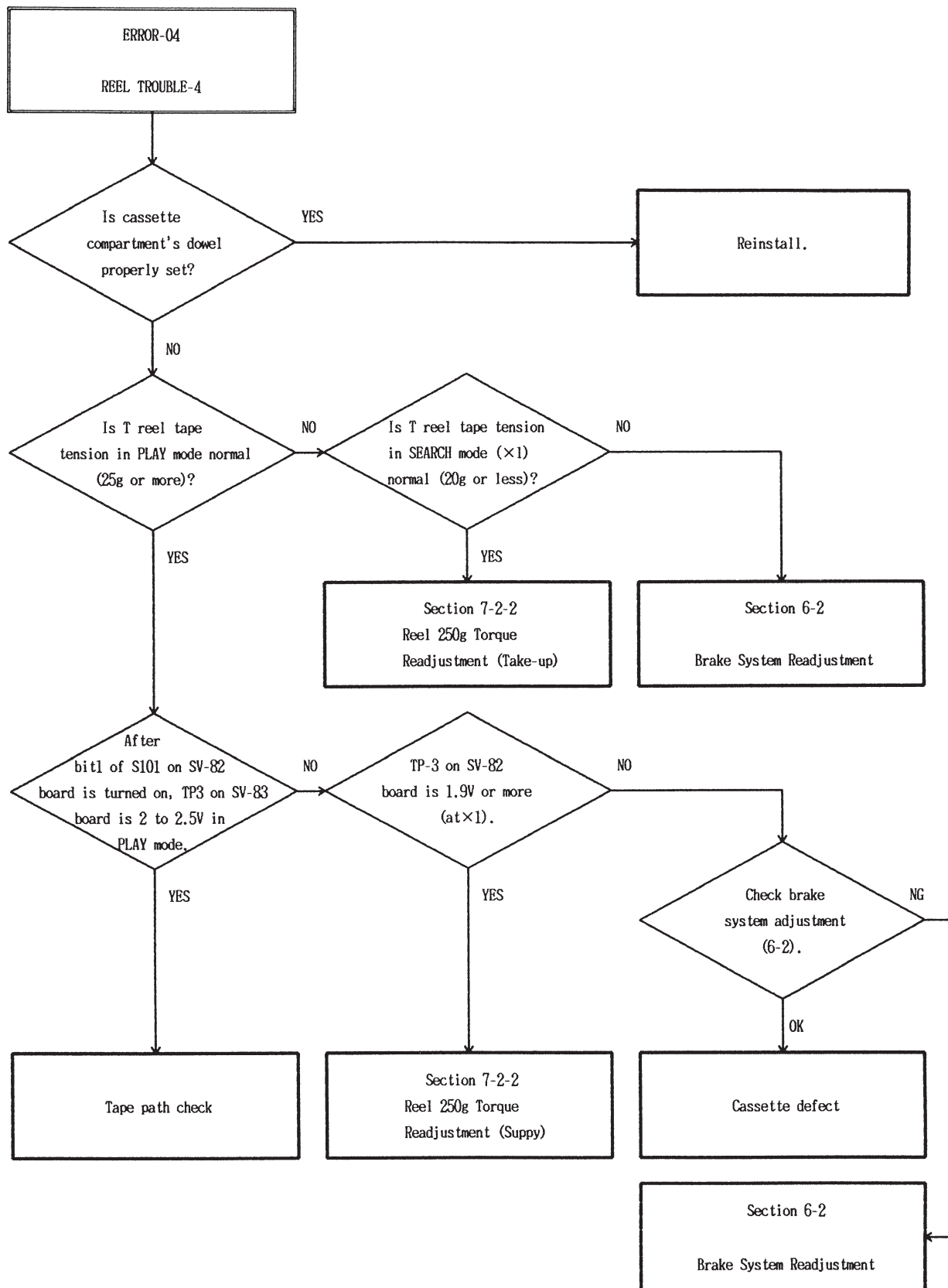


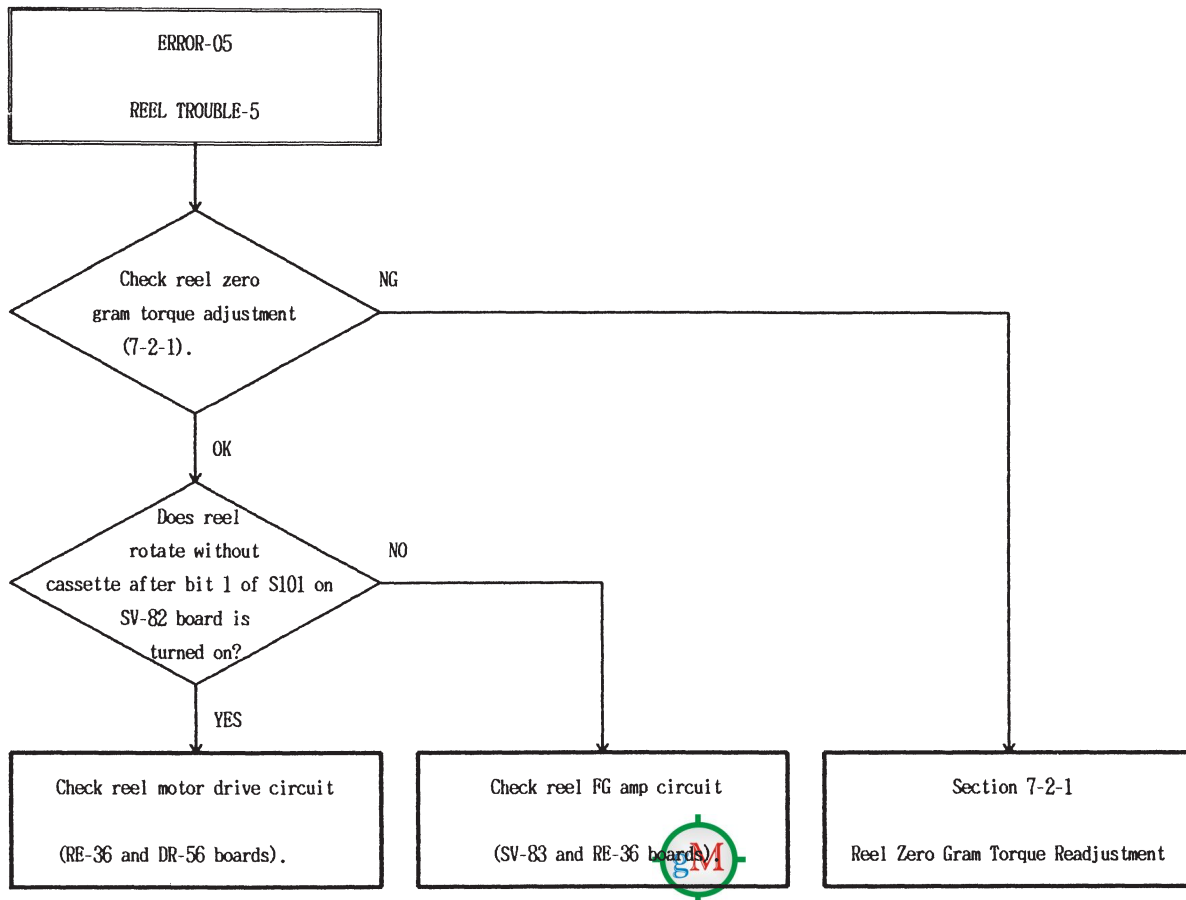
From page 2-21 \*NO

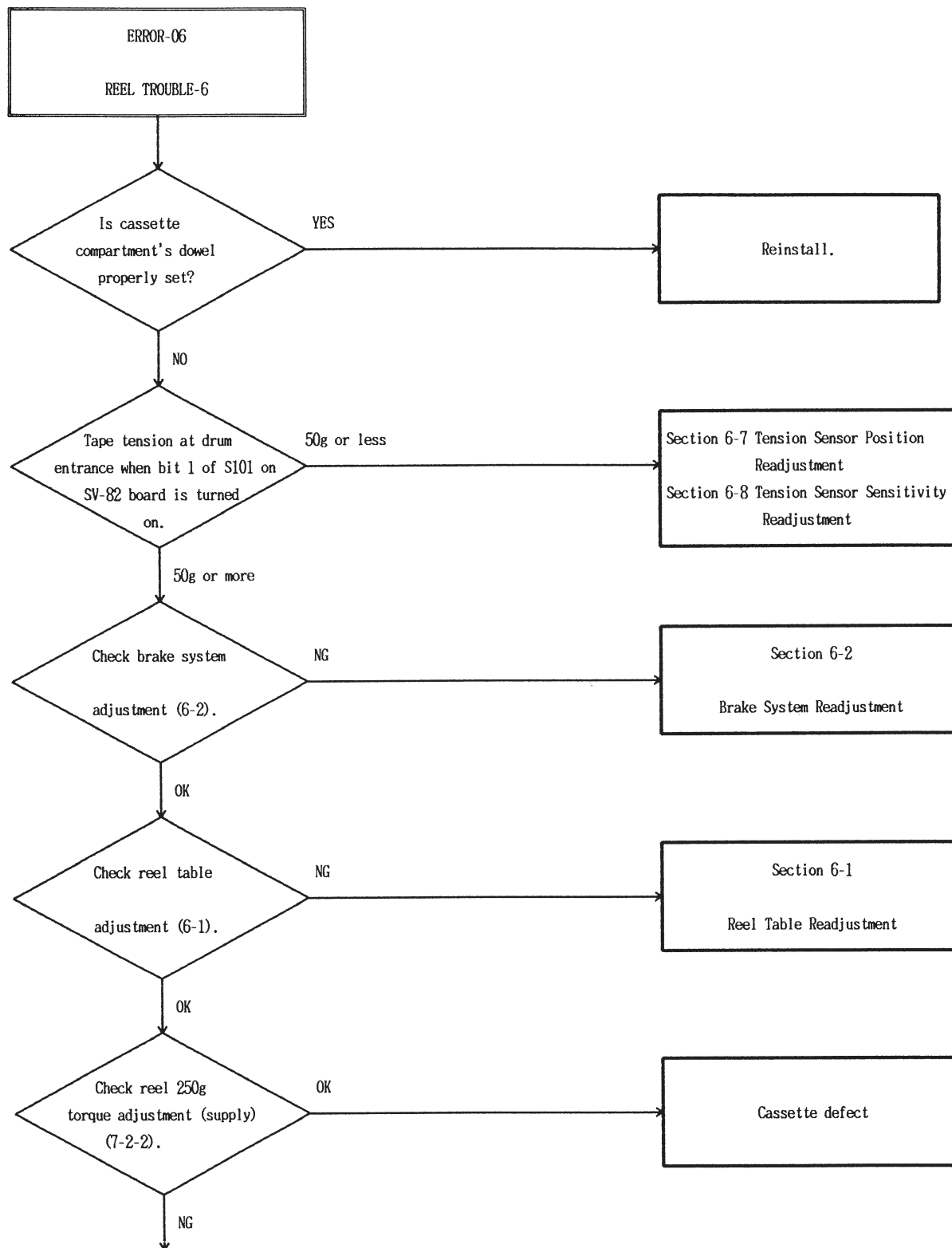


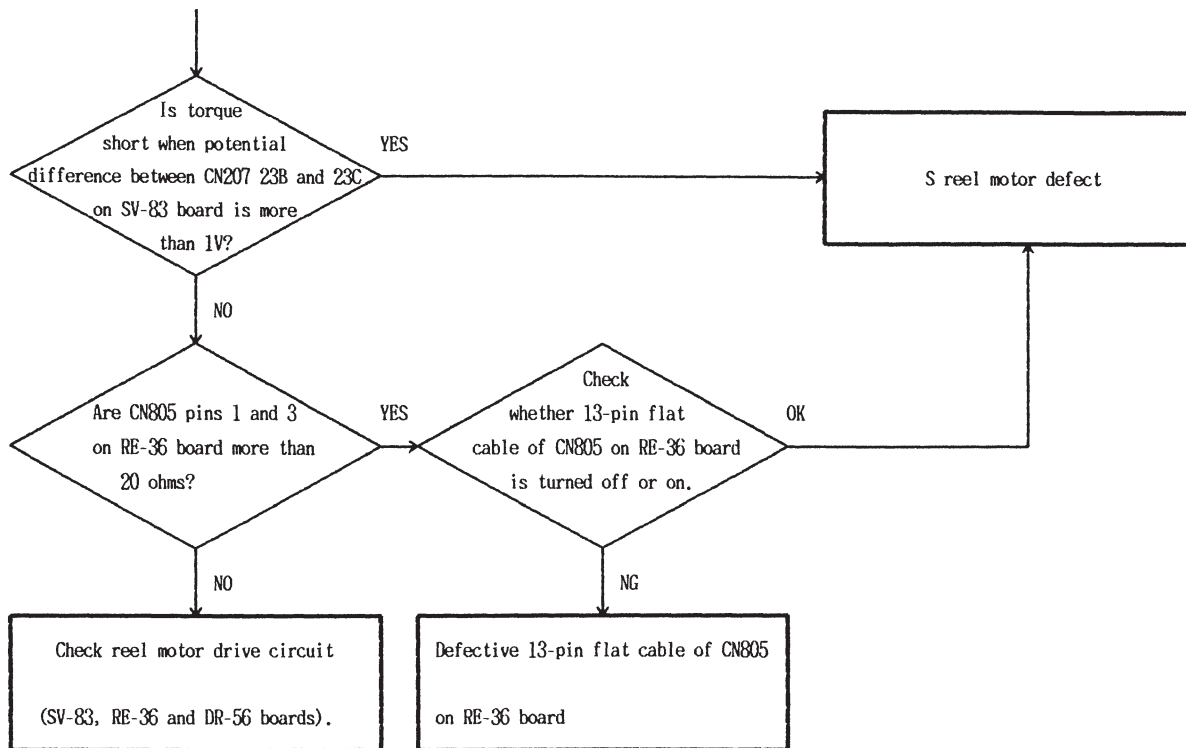




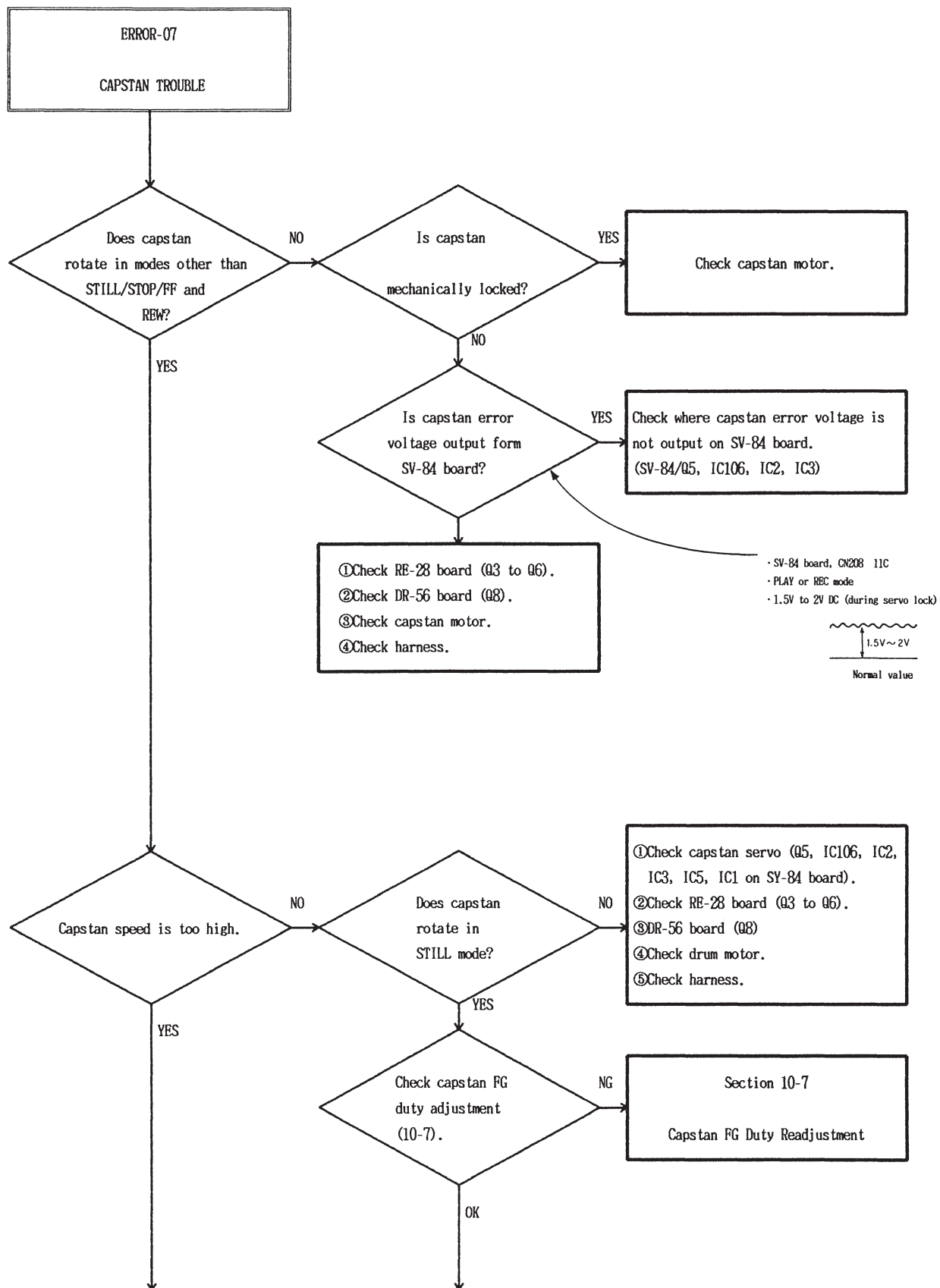


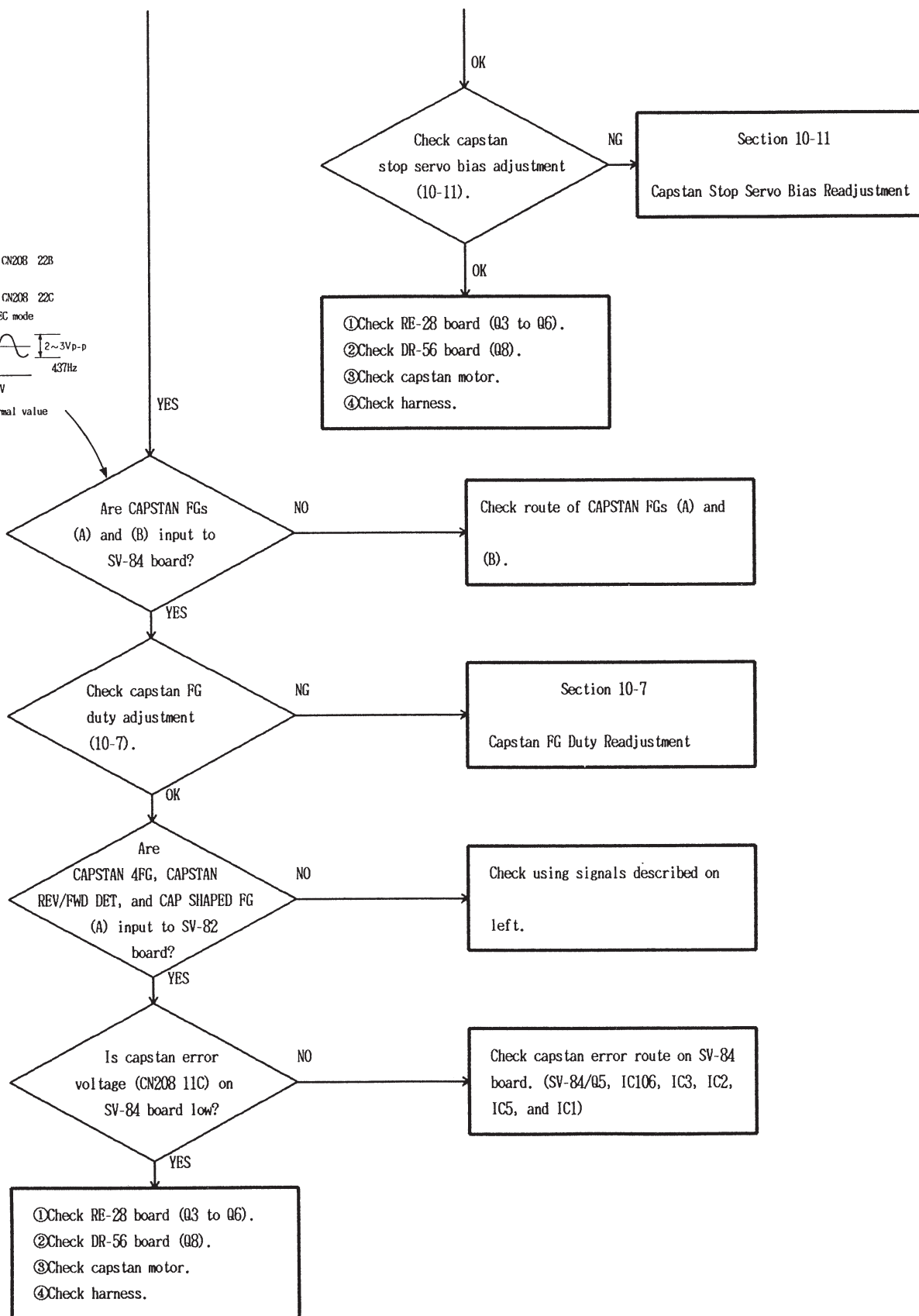
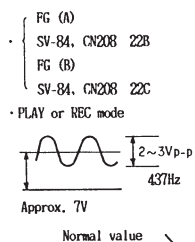


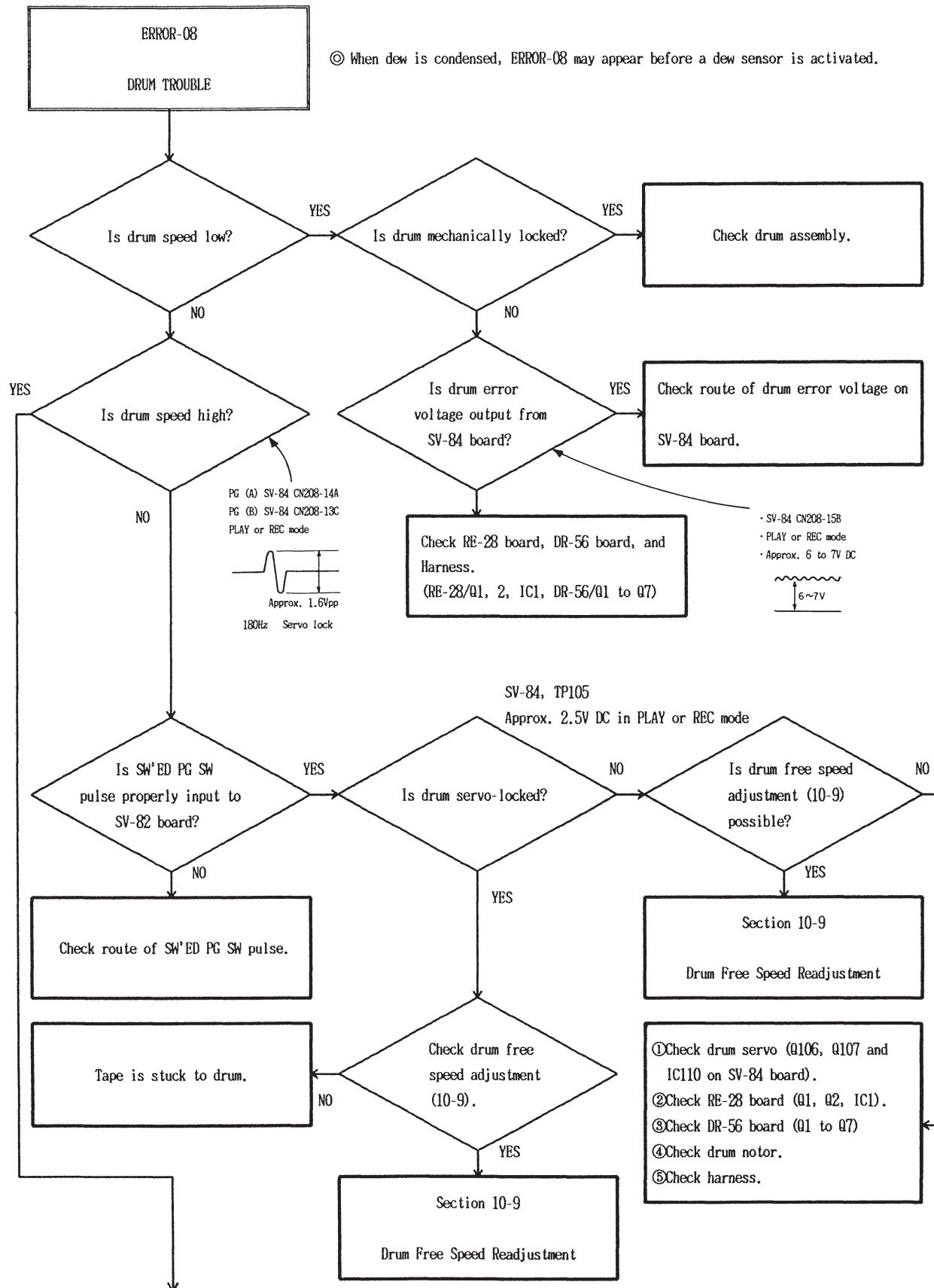


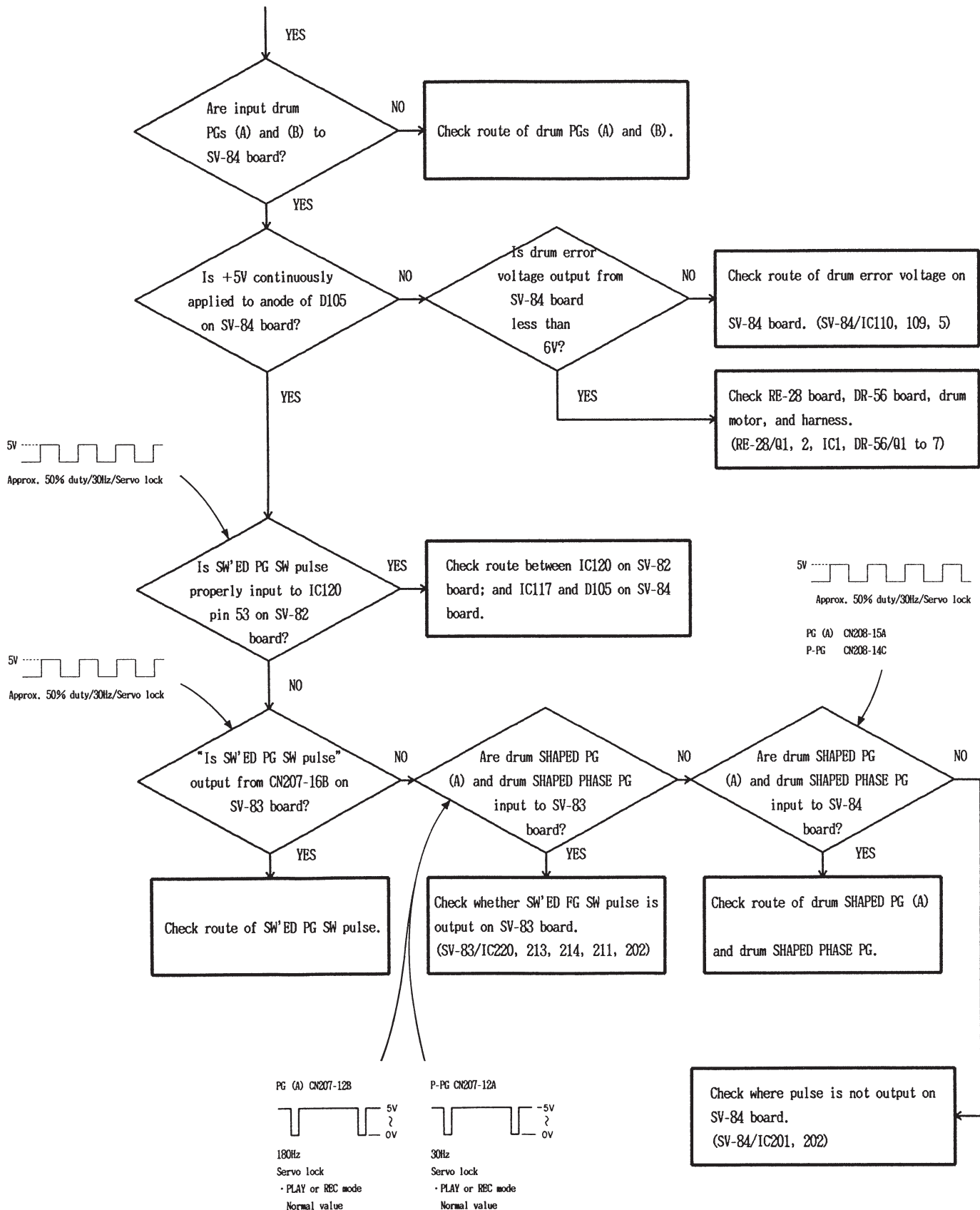


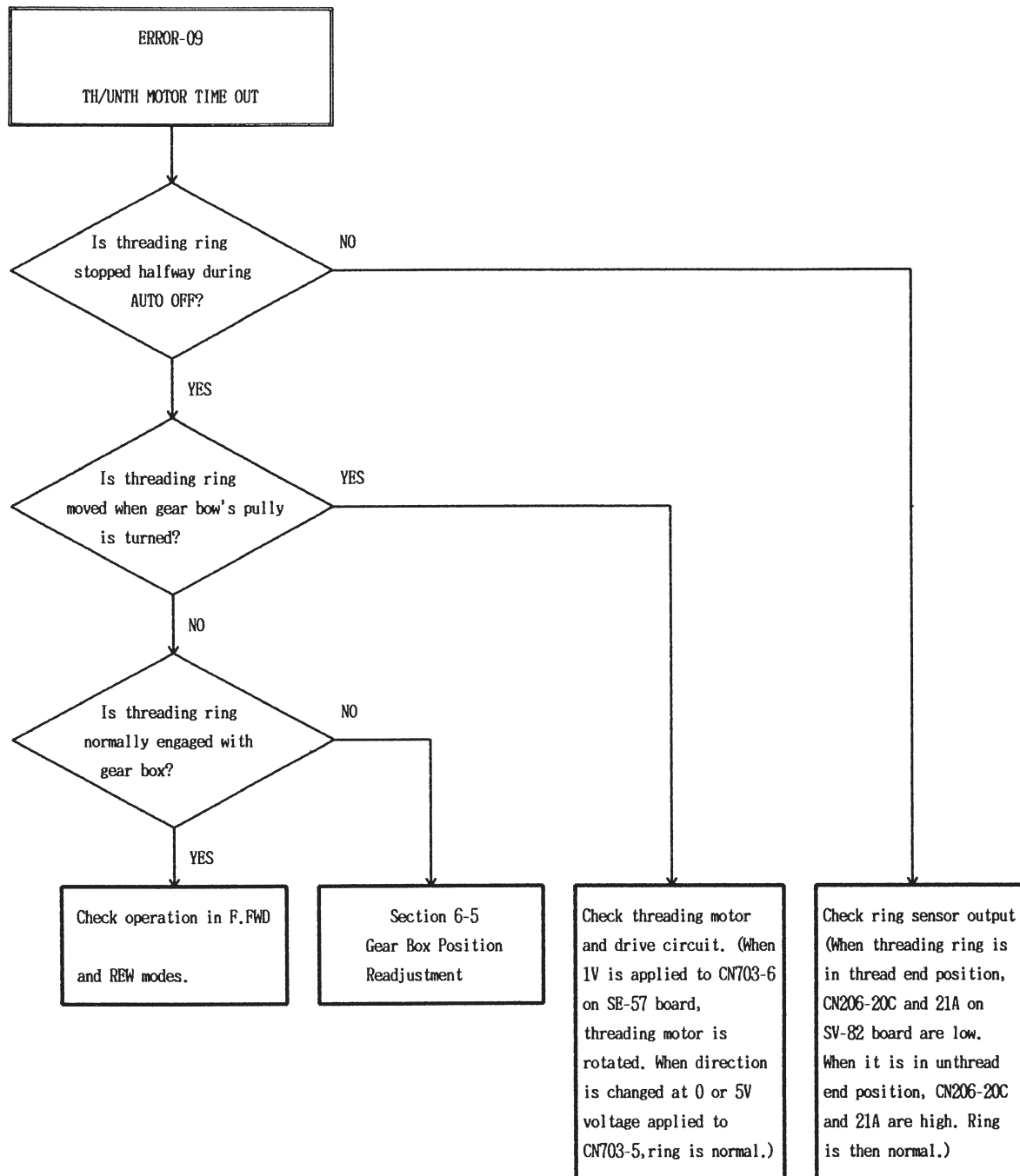


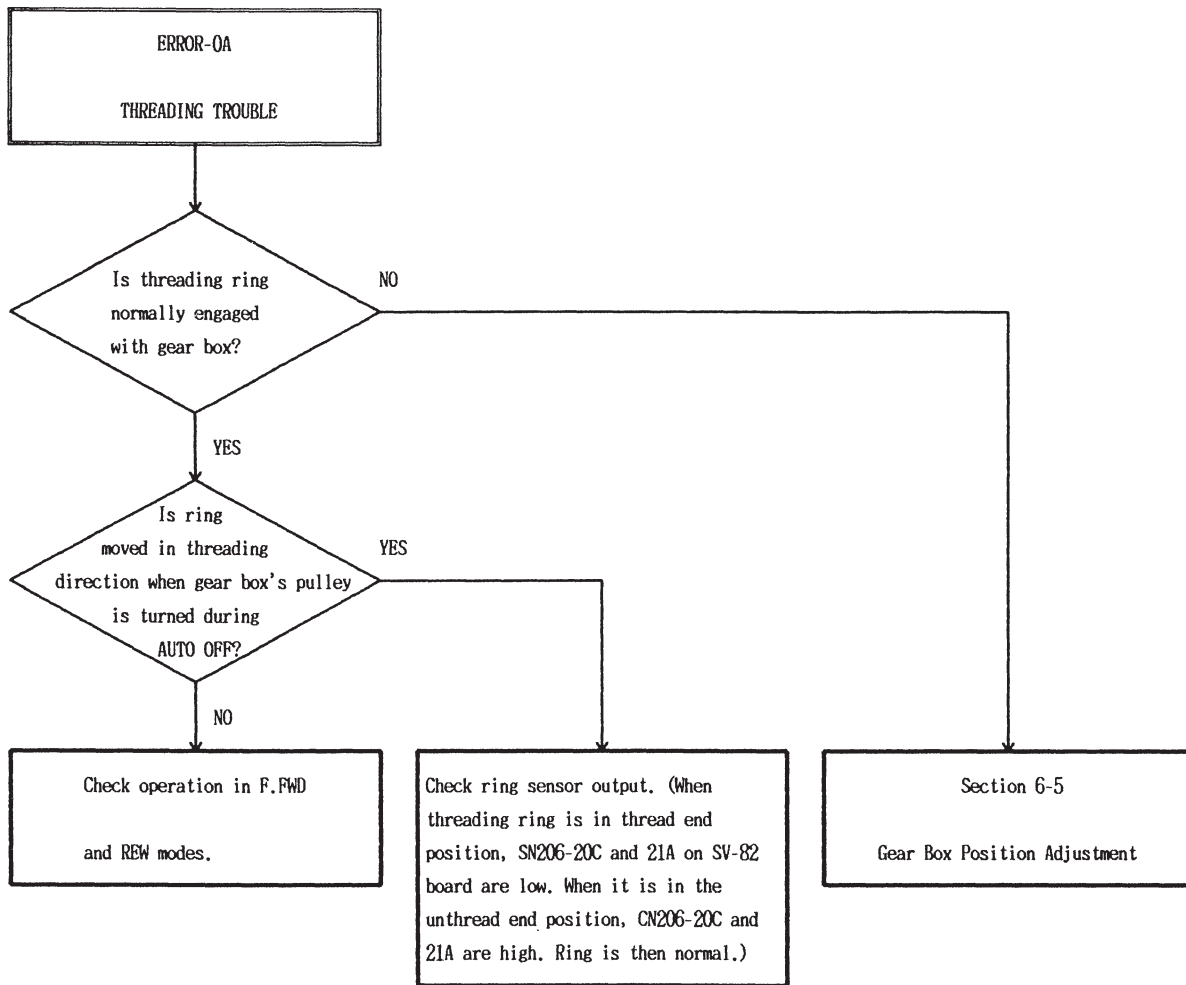


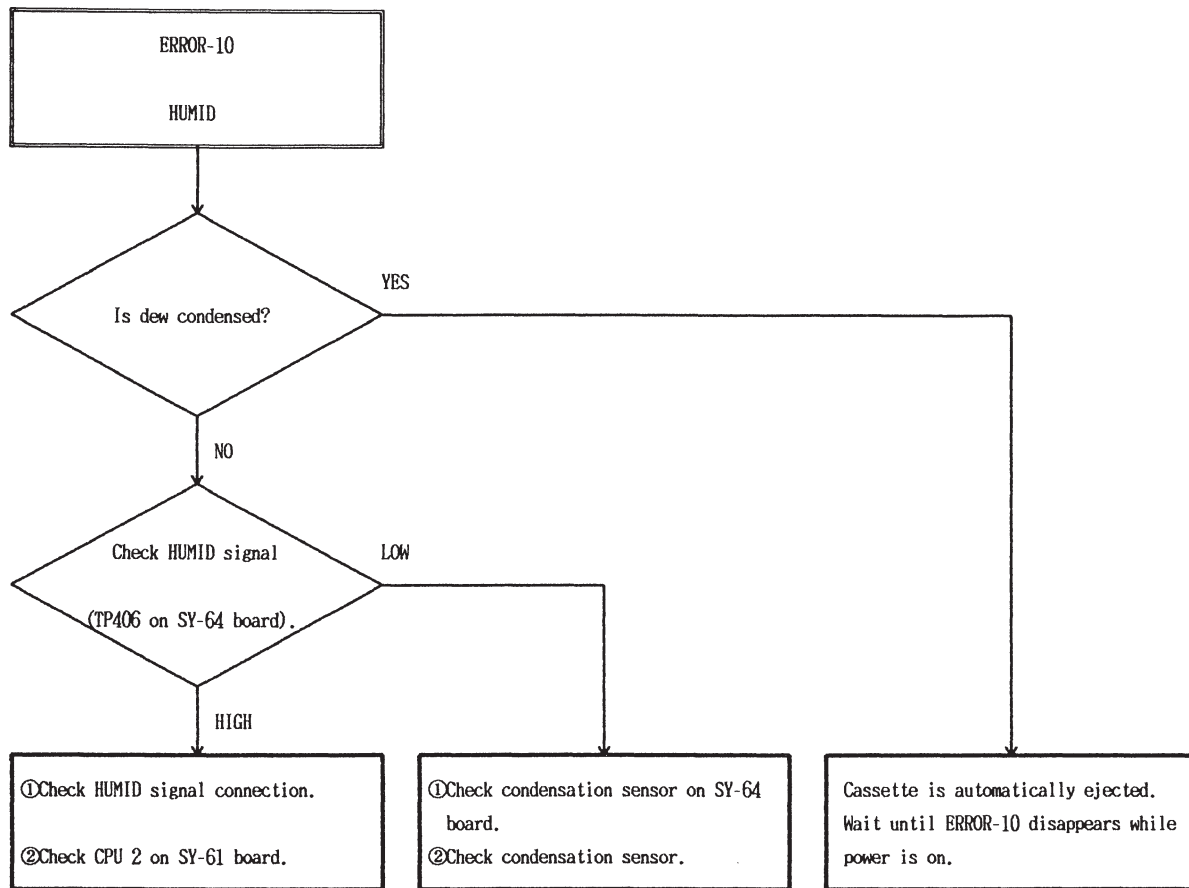


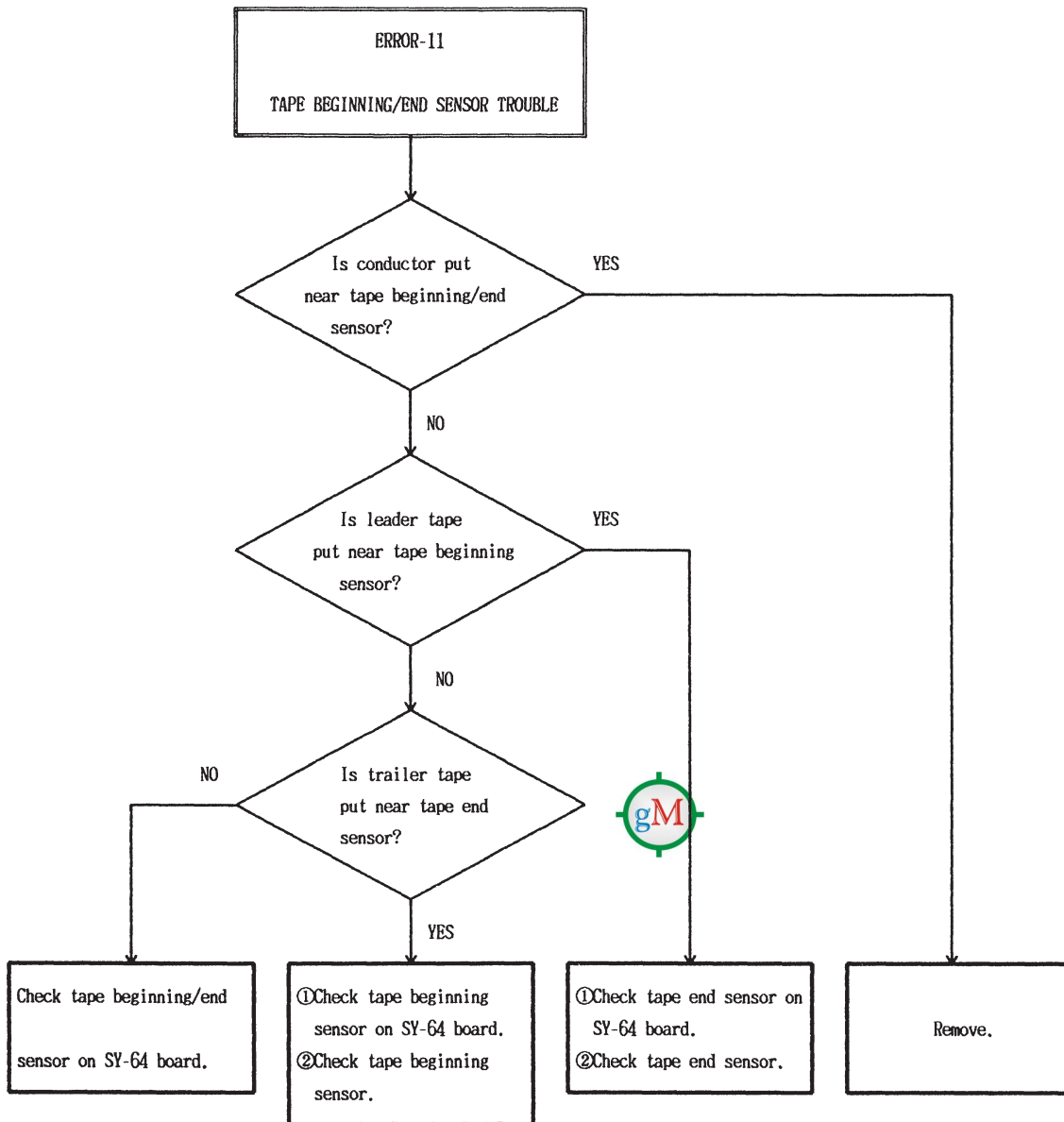




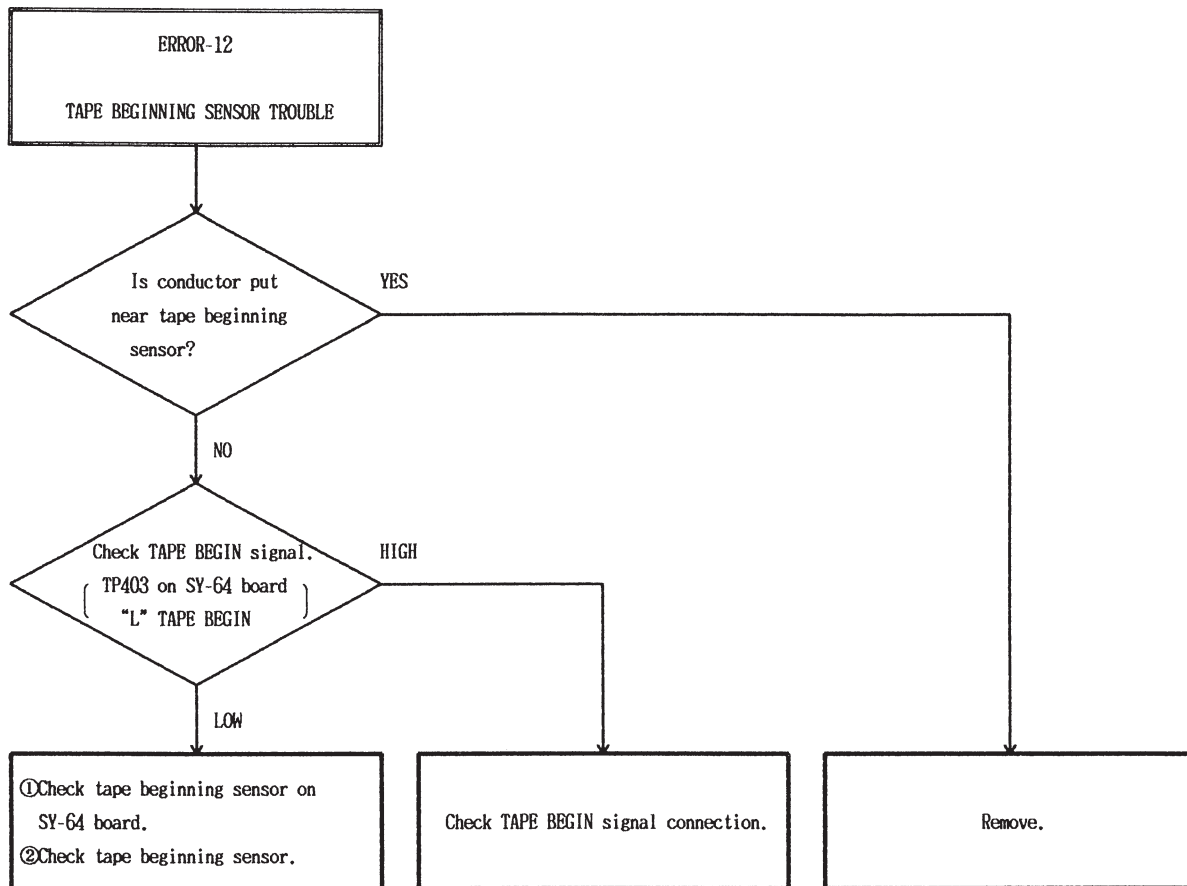


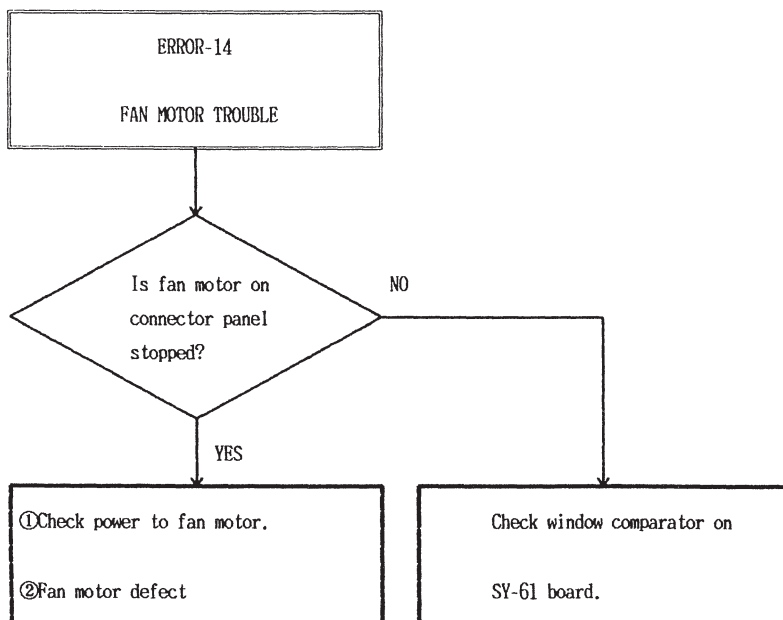
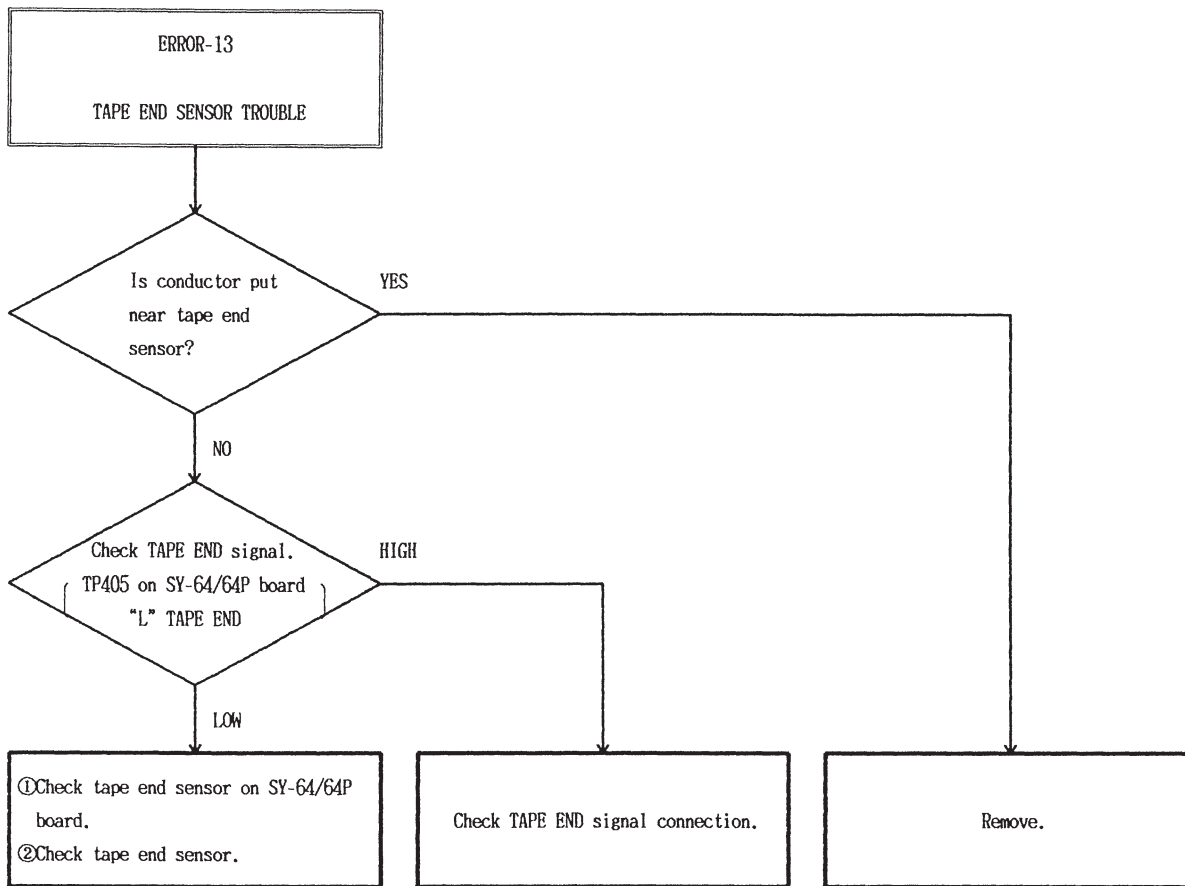


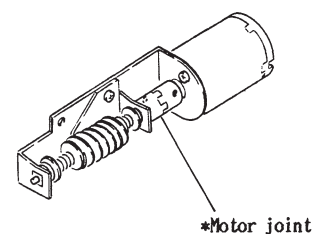
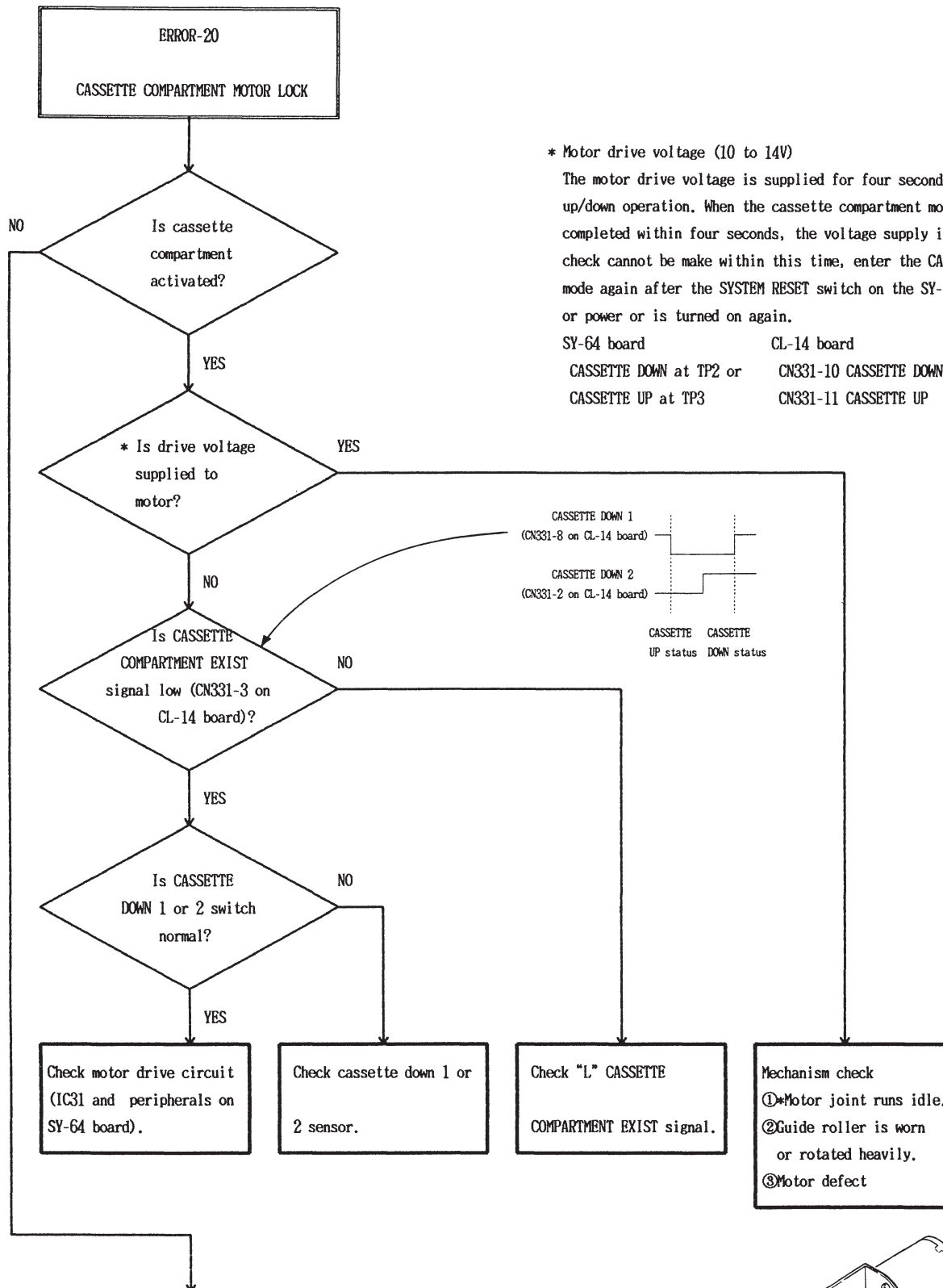


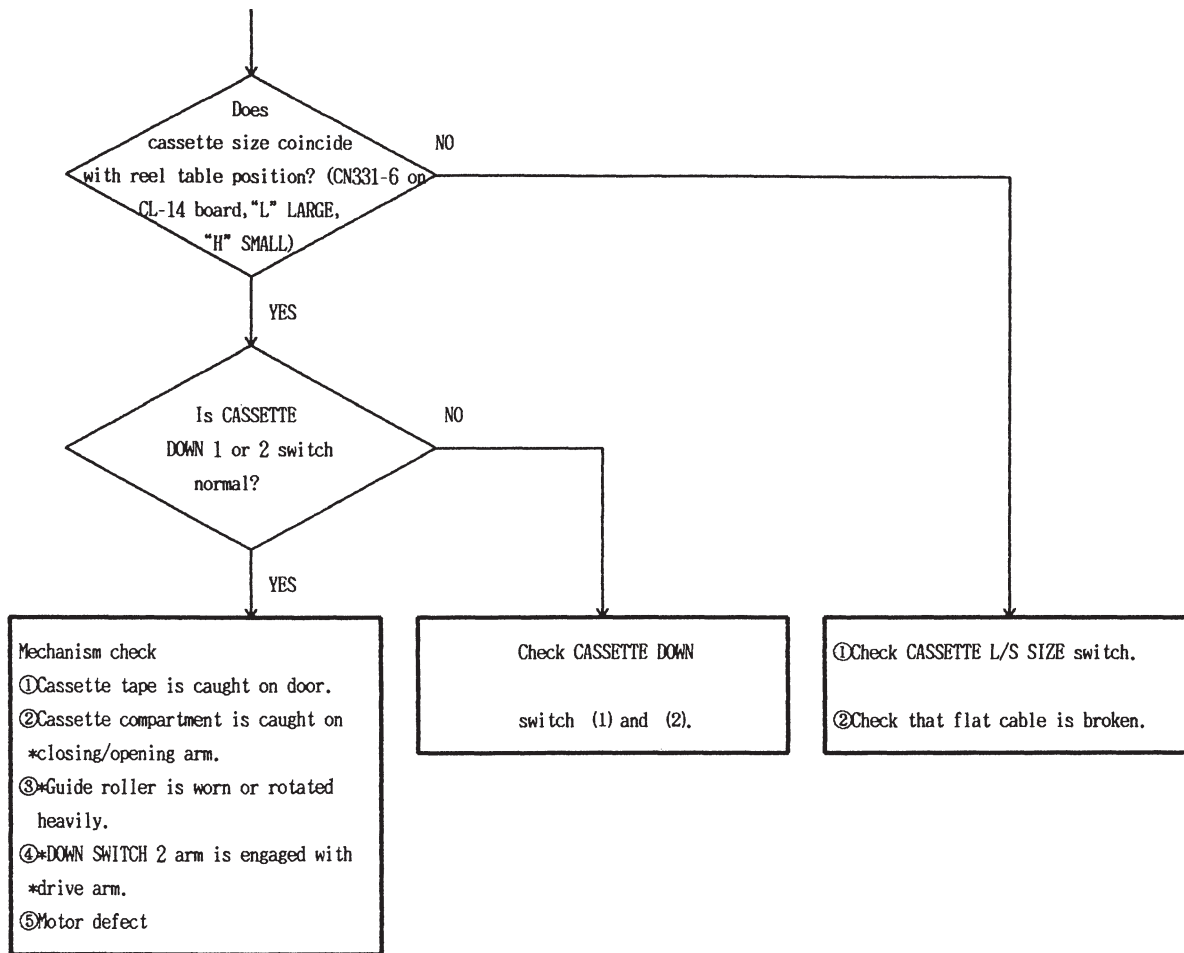




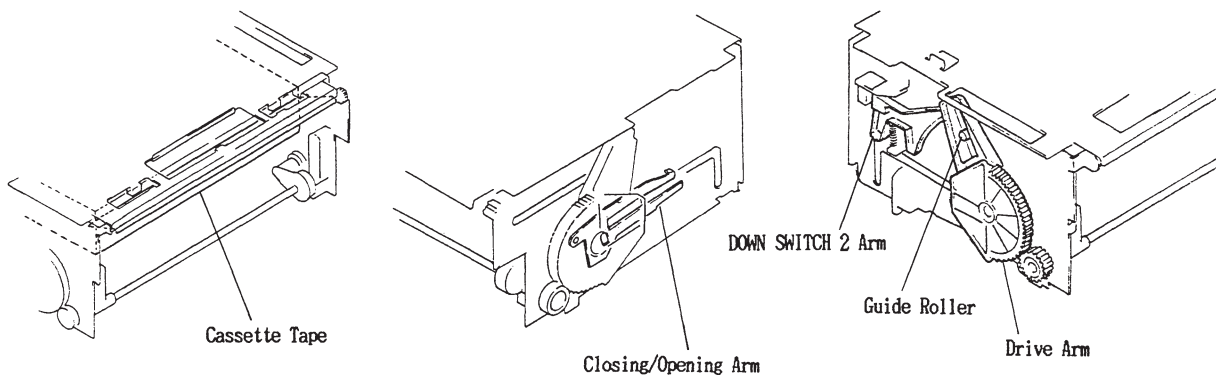




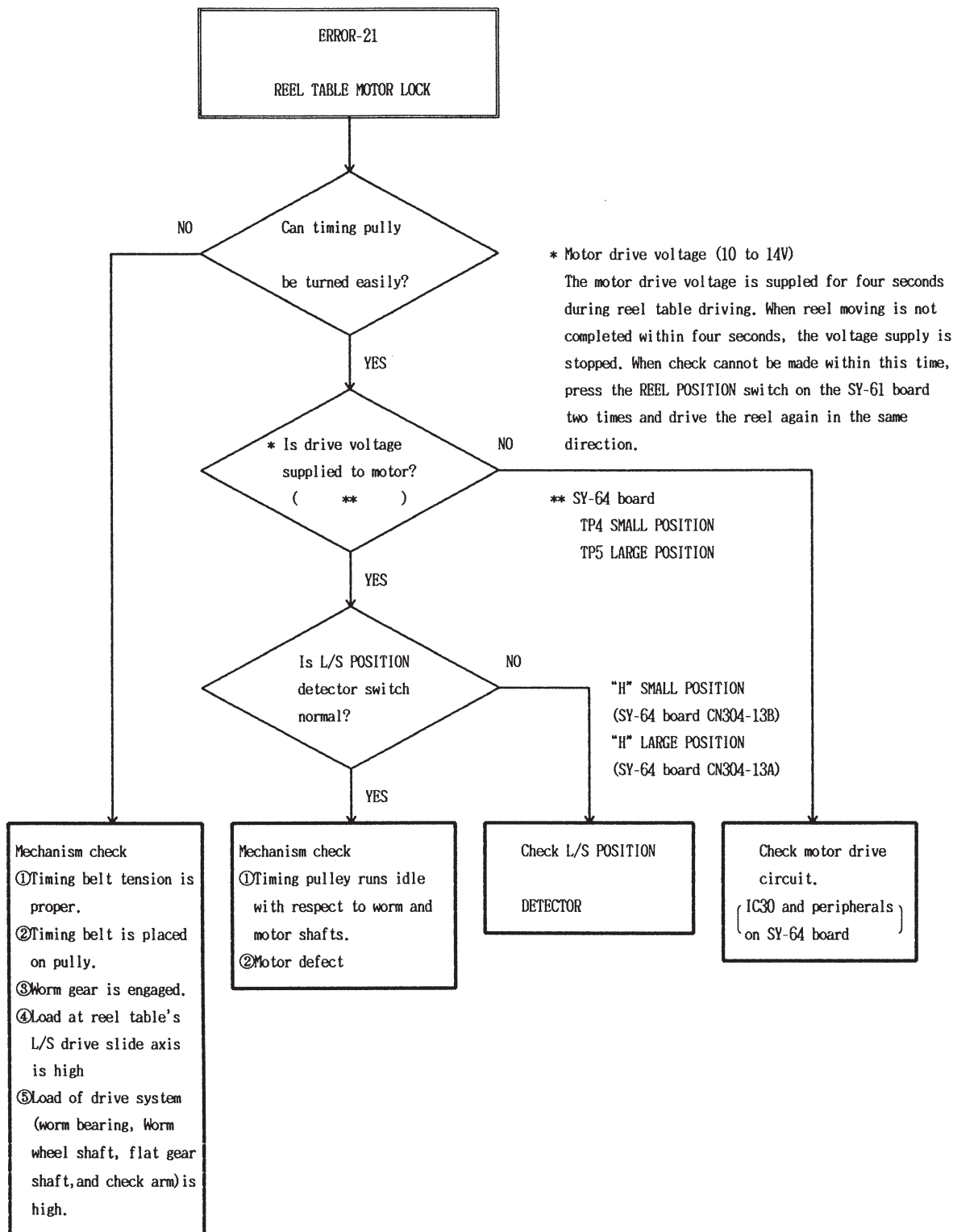


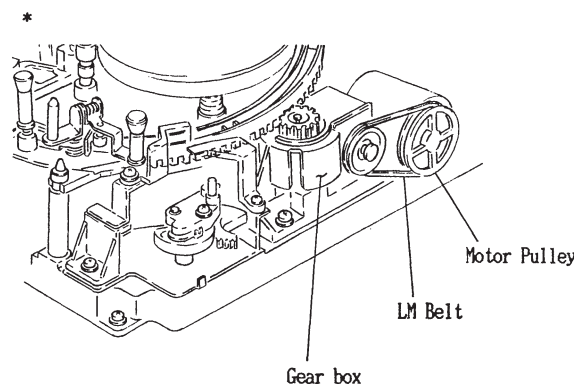
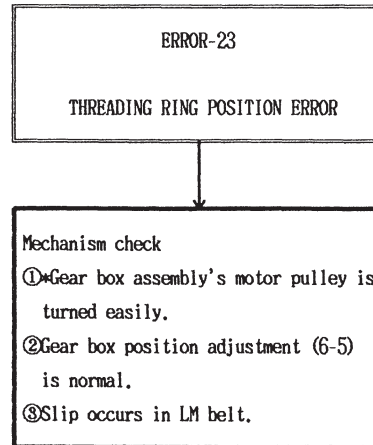
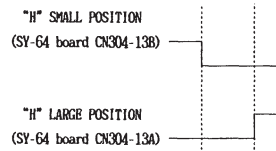
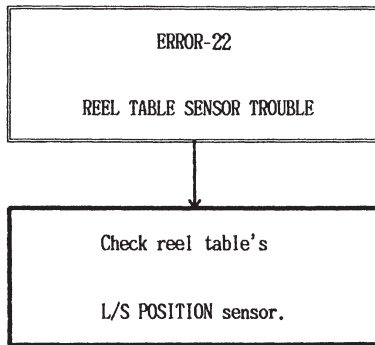


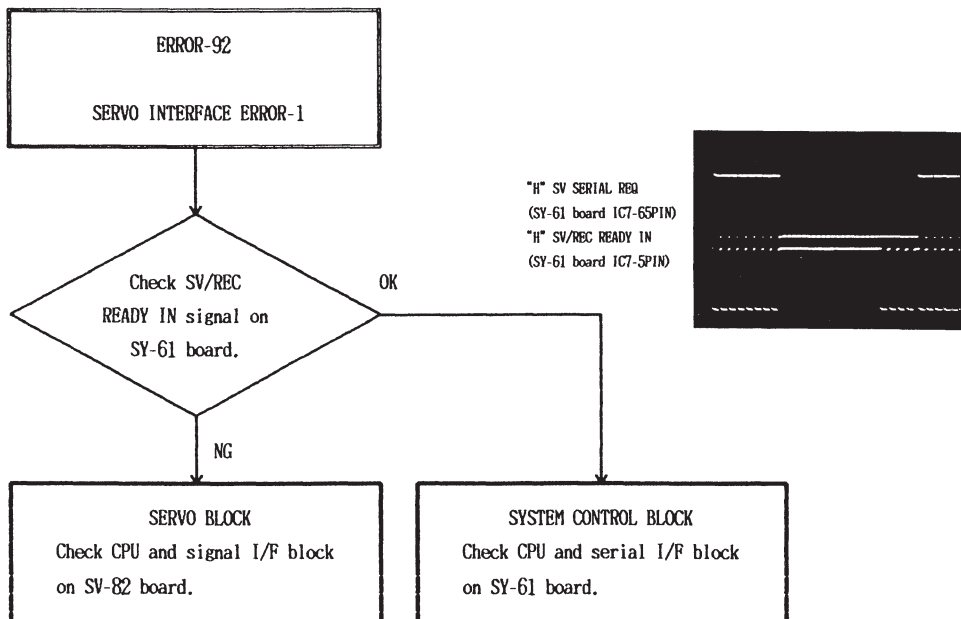
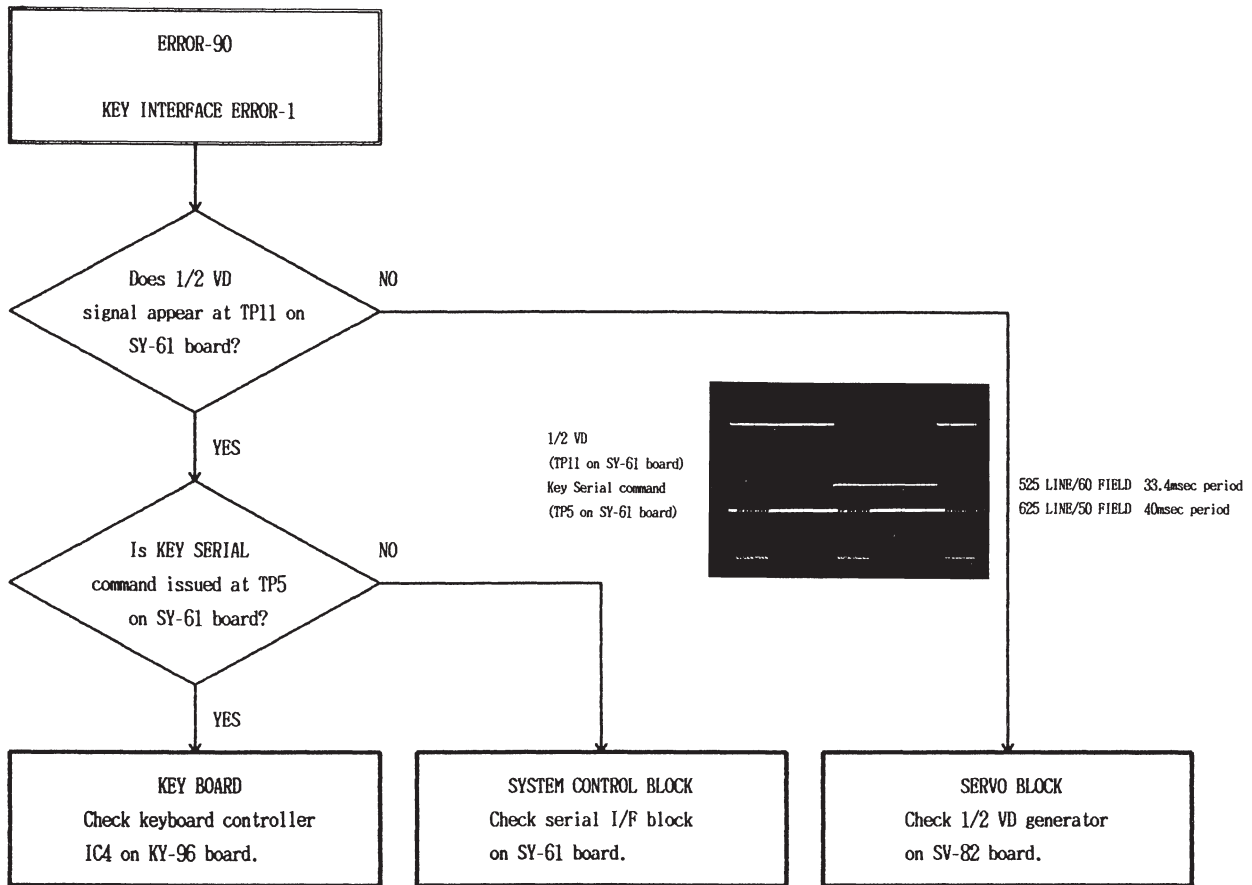
\*



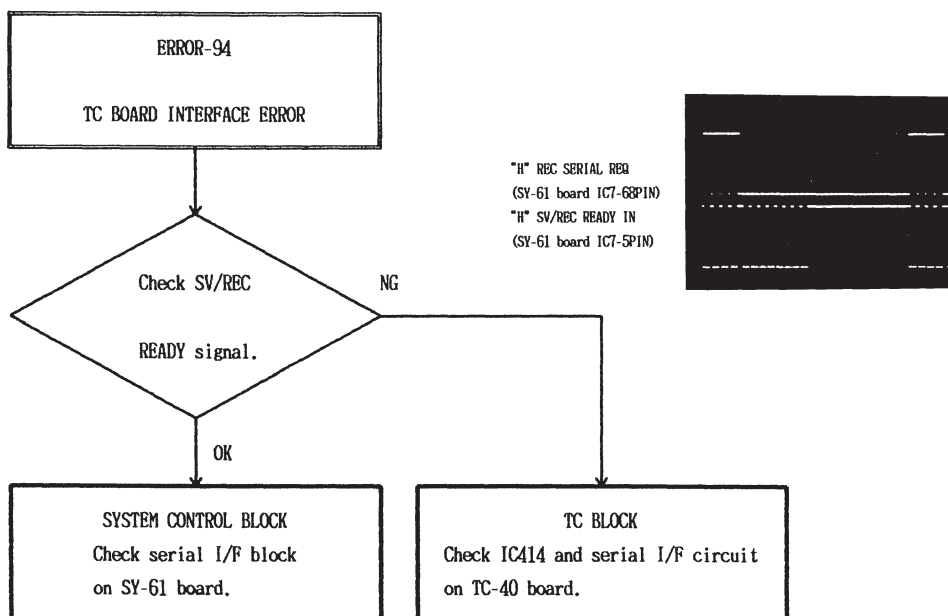
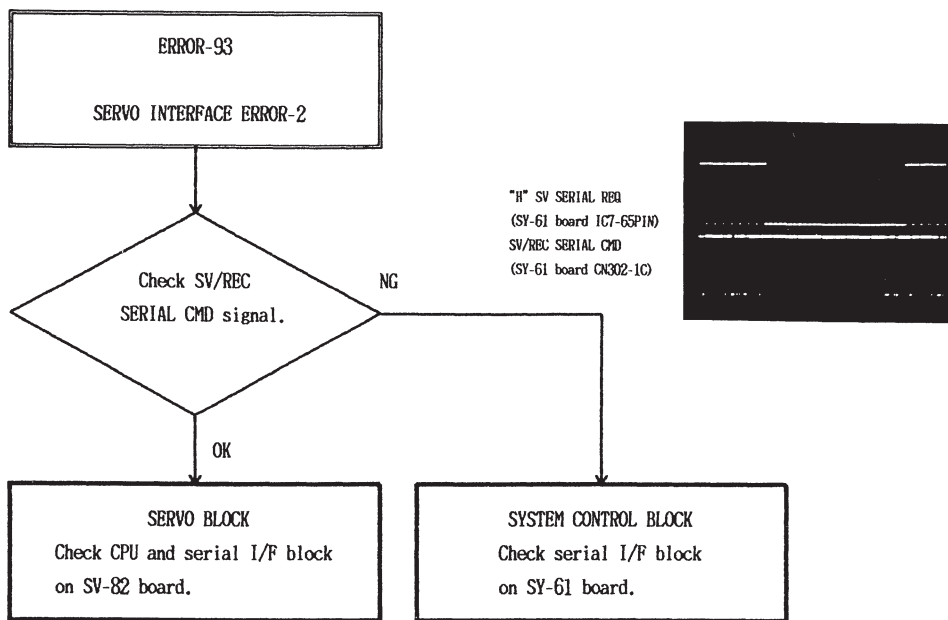
- When this error occurs, remove and check the cassette compartment.
- When the cassette compartment is removed, the EJECT button is pressed, and the REEL POSITION switch on the SY-61 board is pressed in UNTHREAD END mode, the reel position can be selected at random.

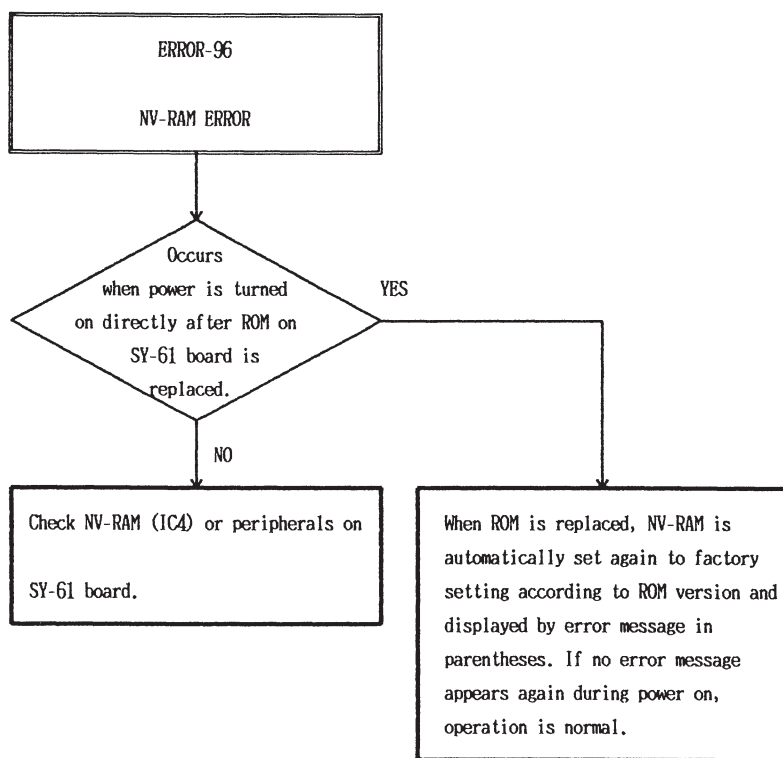
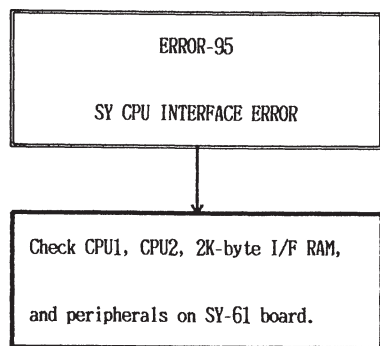














# SECTION 3

## PERIODIC CHECK AND MAINTENANCE

### 3-1. SYSTEM CONTROL OPERATION CHECK

#### 3-1-1. Playback, F.FWD, REW, SHUTTLE, JOG, and Preroll Function Checks

The following should be checked daily before operation.

The check procedure described here is primarily for the BVW-75 but can also be applied to operating the remote control unit.

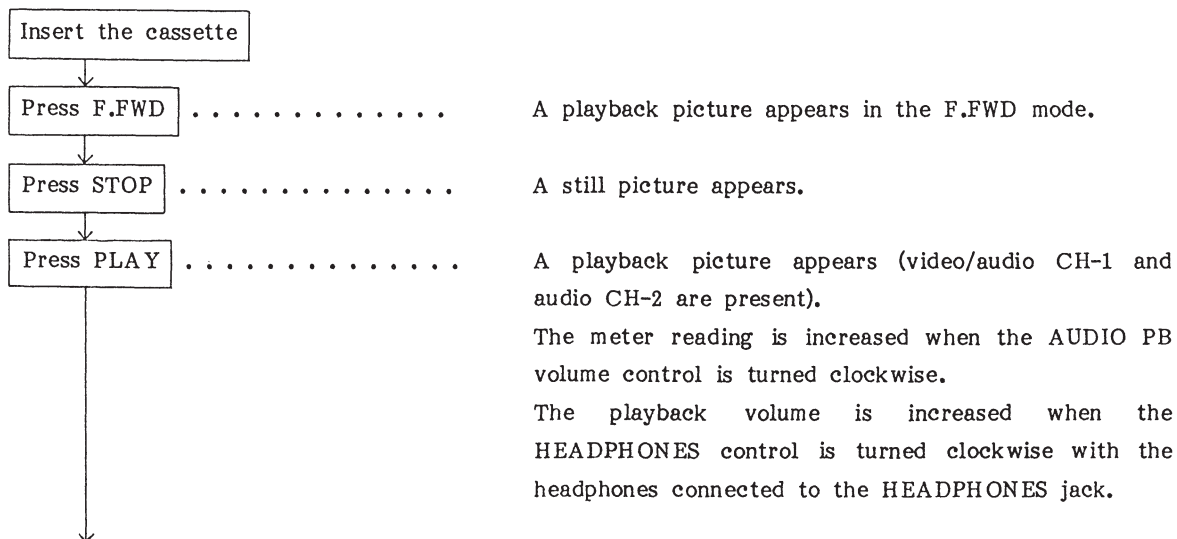
Note that the switches must be set according to how the machine is used after the checks.

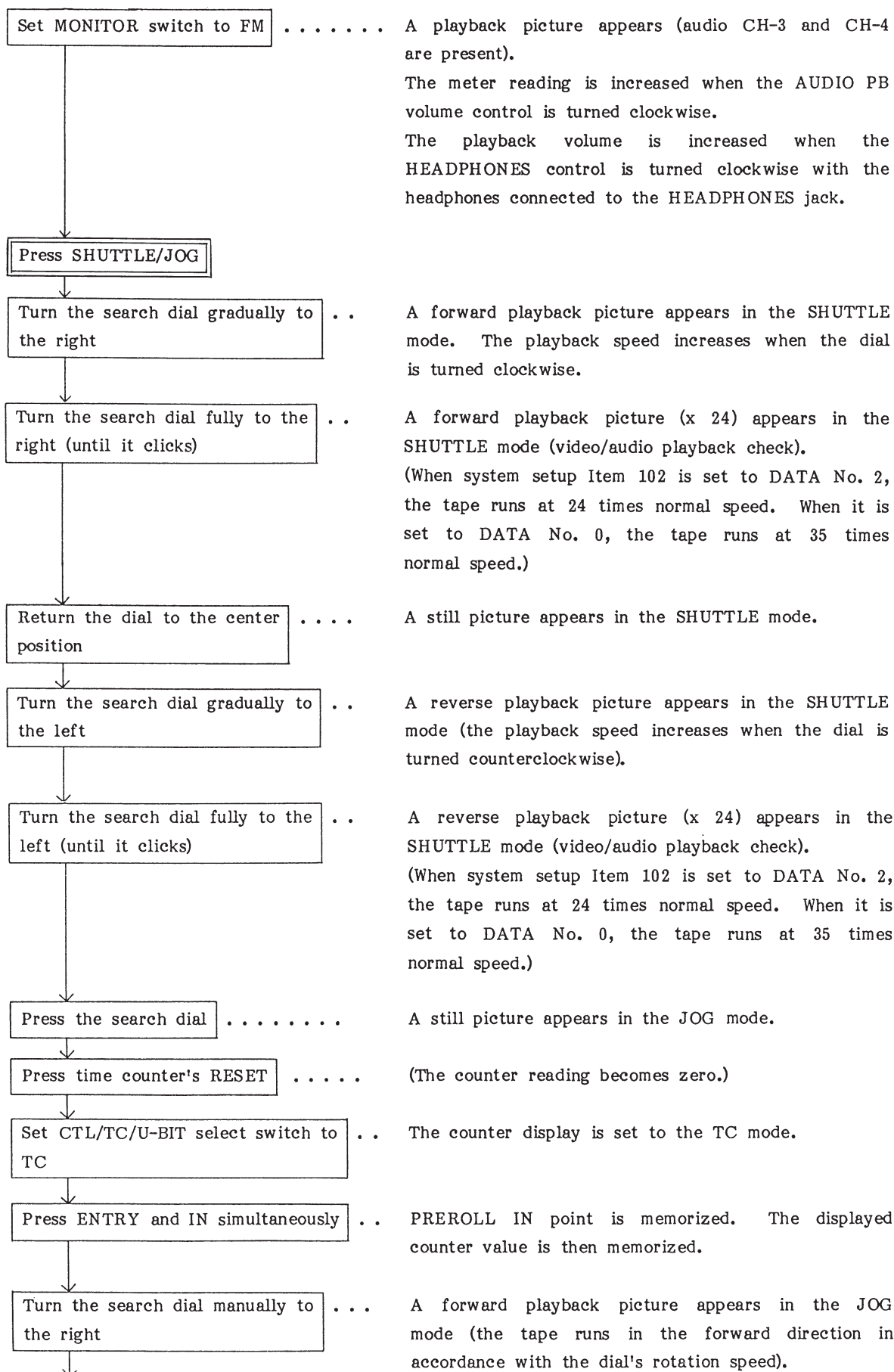
- . Thread a recorded tape (Video, Audio CH-1/CH-2/CH-3/CH-4). (Do not use an alignment tape.)
- . Connect a video/audio monitor.
- . Internal switch setting: The following are the procedures when Item 101 is set to DATA No. 1 in the system setup. When it is set to DATA No. 0, the procedure indicated within the double line need not be performed.  
(Refer to Sec. 1-7 for further details.)
- . Select switch setting;
 

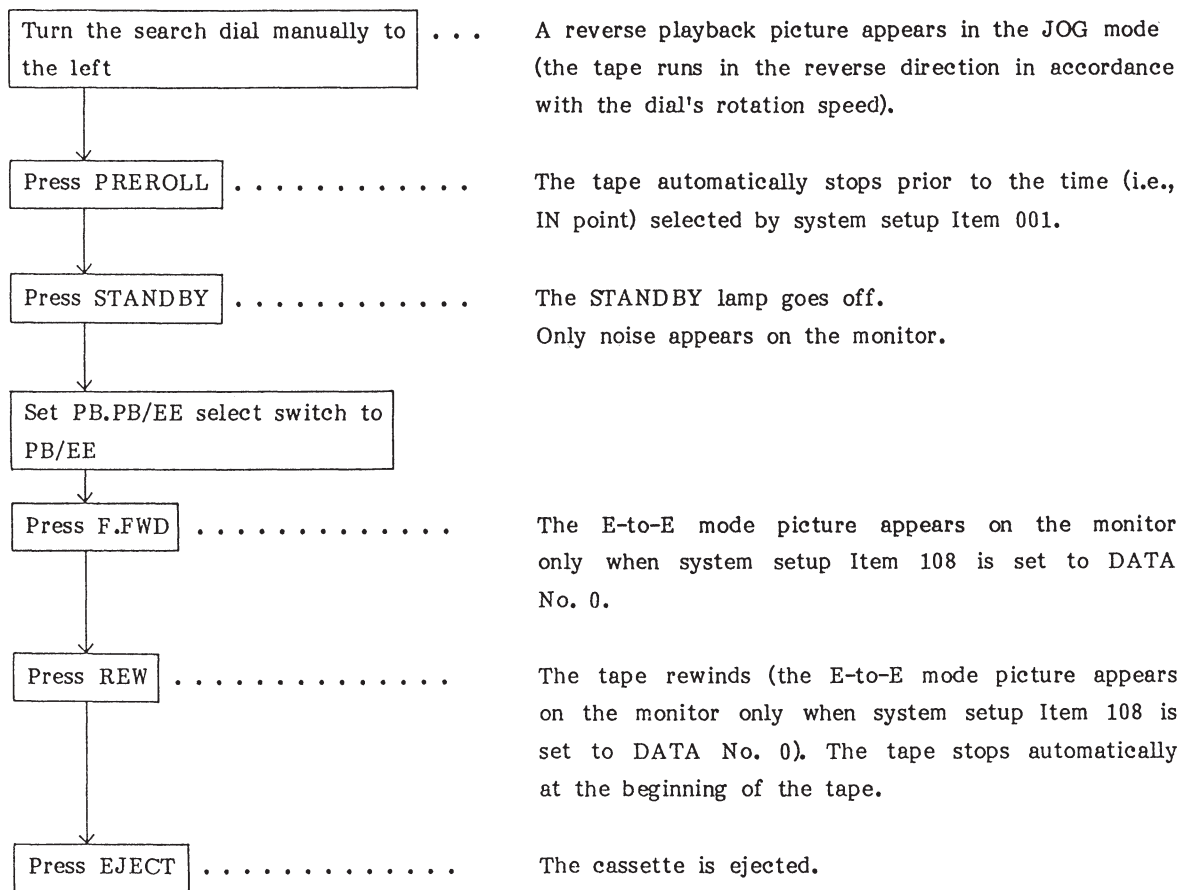
POWER	: ON
REMOTE/LOCAL	: LOCAL
PB,PB/EE	: PB
AUDIO MONITOR	: ST/MIX
MONITOR	: LNG
CTL/TC/U-BIT	: CTL
TRACKING	: FIX
DT SELECT	: OFF
SHUTTLE/JOG	: SHUTTLE

#### Action

#### Check that





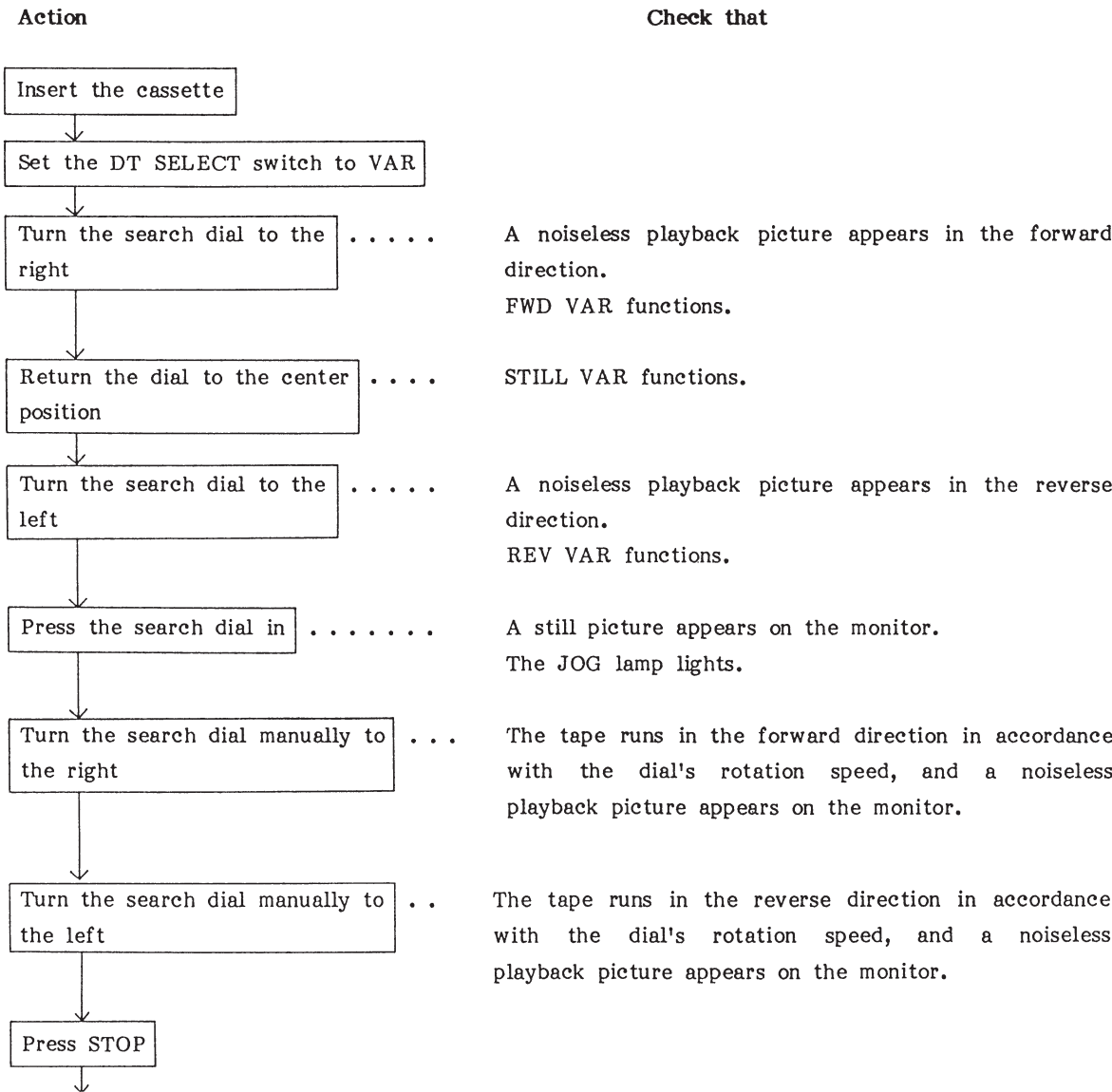


3-1-2. DT Playback Function Check

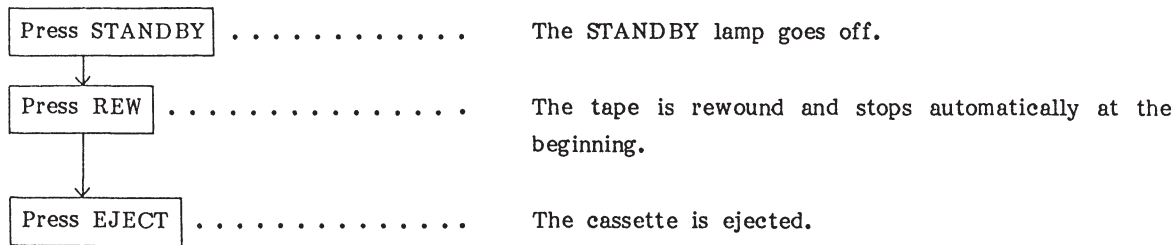
The following should be checked daily before operation when the BVW-75 is used as a playback unit in the DT mode.

Note that the switches must be set according to how the machine is used after the checks.

- . Insert a video cassette tape on which a video signal is recorded. (Do not use an alignment tape.)
- . Connect a video monitor.
- . Select switch setting;      POWER                               : ON  
                                 REMOTE/LOCAL               : LOCAL  
                                 INPUT SELECT               : COMPOSITE  
                                 PB,PB/EE                   : PB







### 3-1-3. Record Function Check

The following should be checked daily before operation when the BVW-75 is used as a recorder only.

The check procedure described here is primarily for the BVW-75 but can also be applied to operating the remote control unit.

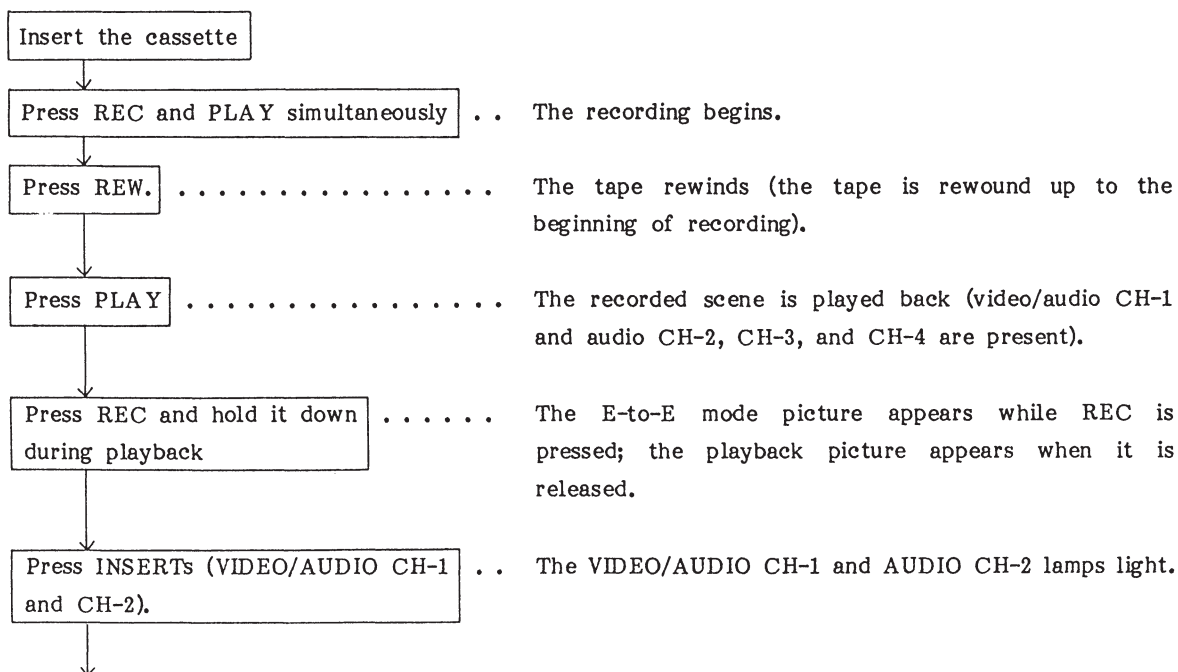
Note that the switches must be set according to how the machine is used after the checks.

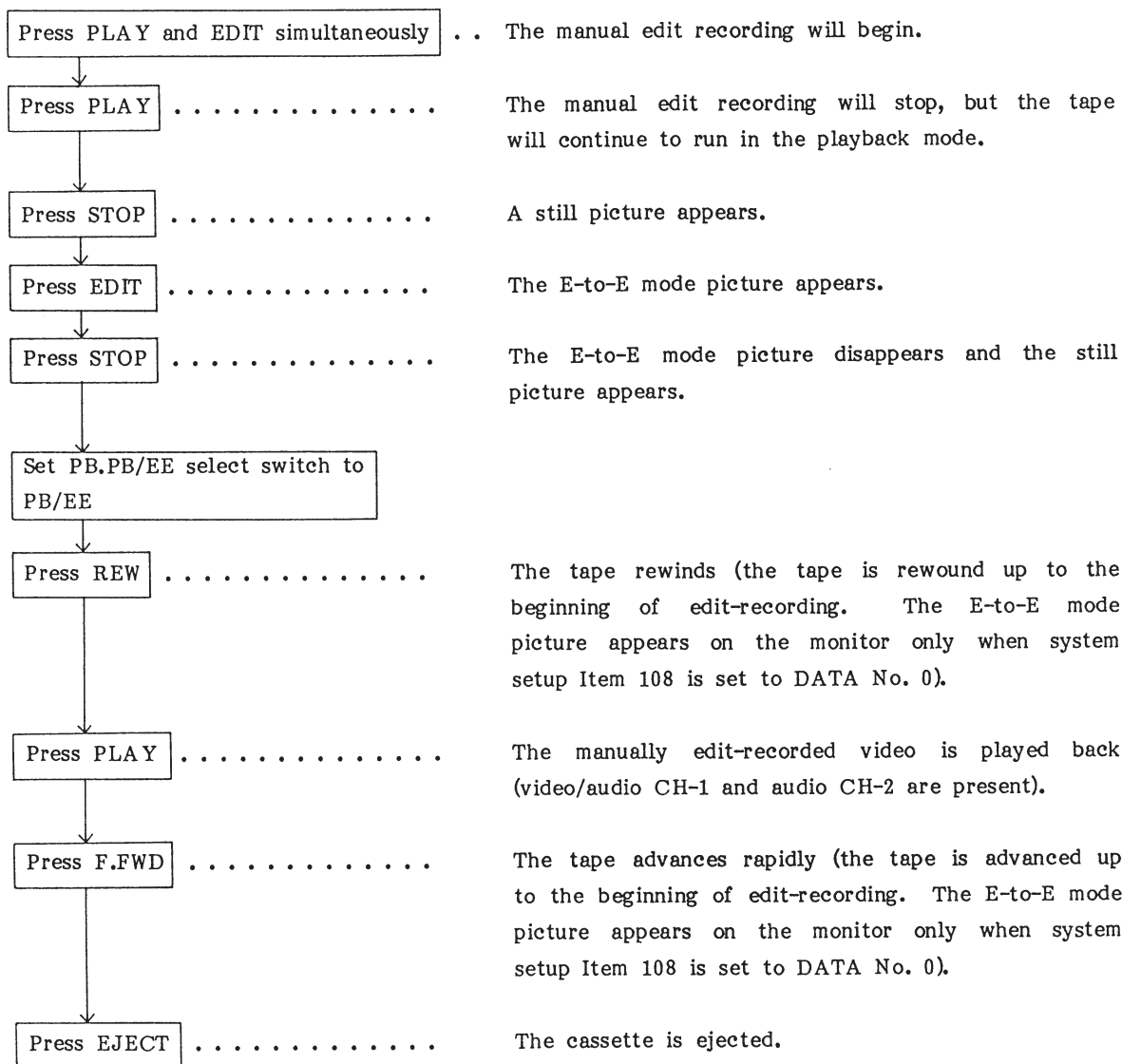
- . Insert a video cassette tape on which recording and playback can be made.
- . Connect signals to the VIDEO IN/AUDIO IN CH-1 and AUDIO IN CH-2, CH-3, and CH-4 connectors.
- . Set the INPUT SELECT switch to COMPOSITE.
- . Connect a video/audio monitor.
- . Select switch setting;

POWER	:	ON
REMOTE/LOCAL	:	LOCAL
INPUT SELECT	:	COMPOSITE
PB.PB/EE	:	PB

#### Action

#### Check that





### 3-1-4. Editing Function Check

The following (including Sec. 3-1-1) should be checked daily before operation when the BVW-75 is used as an editing machine.

The check procedure described here is primarily for the BVW-75 but can also be applied to operating the remote control unit.

Note that the switches must be set according to how the machine is used after the checks.

- . Thread a recorded tape (Video, Audio CH-1, CH-2, CH-3, and CH-4). (Do not use an alignment tape.)
- . Connect signals to the VIDEO IN/AUDIO IN CH-1, CH-2, CH-3, and CH-4 connectors (use signals that differ from those recorded on the tape).
- . Set the INPUT SELECT switch to COMPOSITE.
- . Internal switch setting: The following are the procedures when Item 101 is set to DATA No. 1 in the system setup.

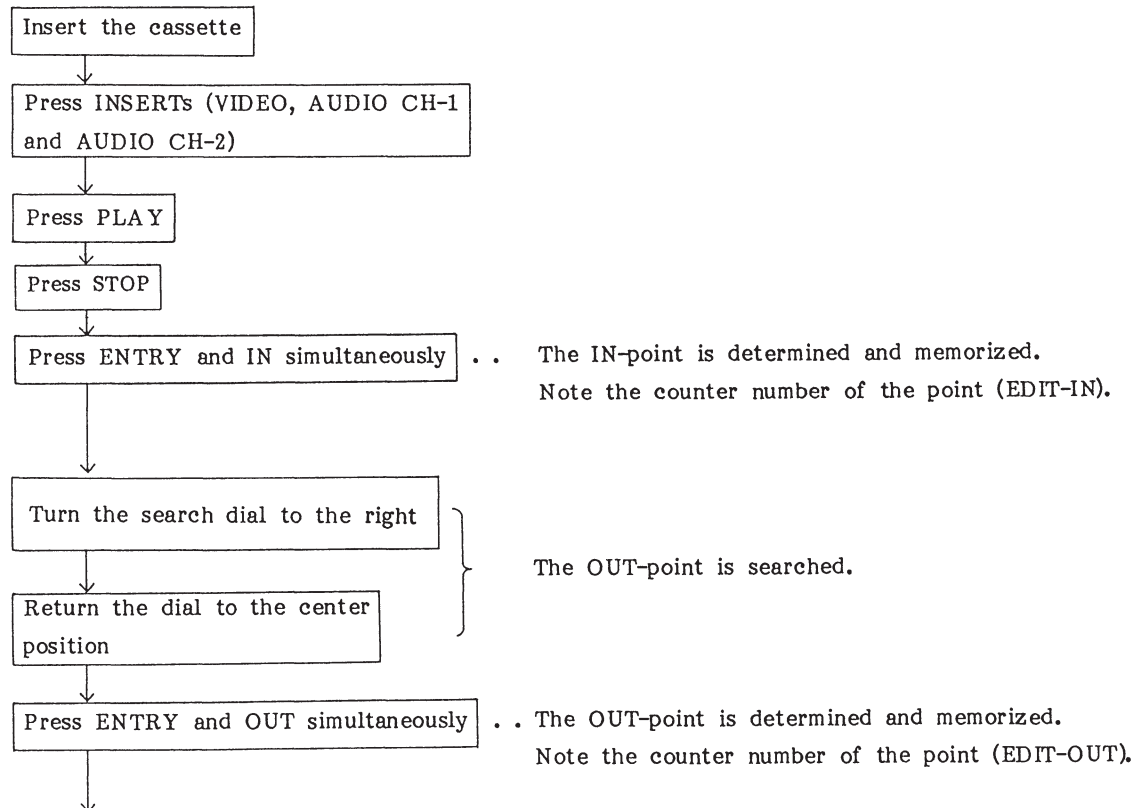
(Refer to Sec. 1-7 for further details.)

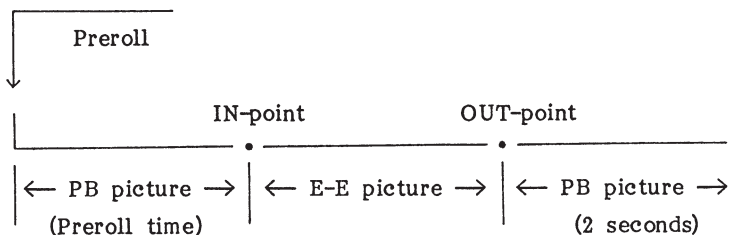
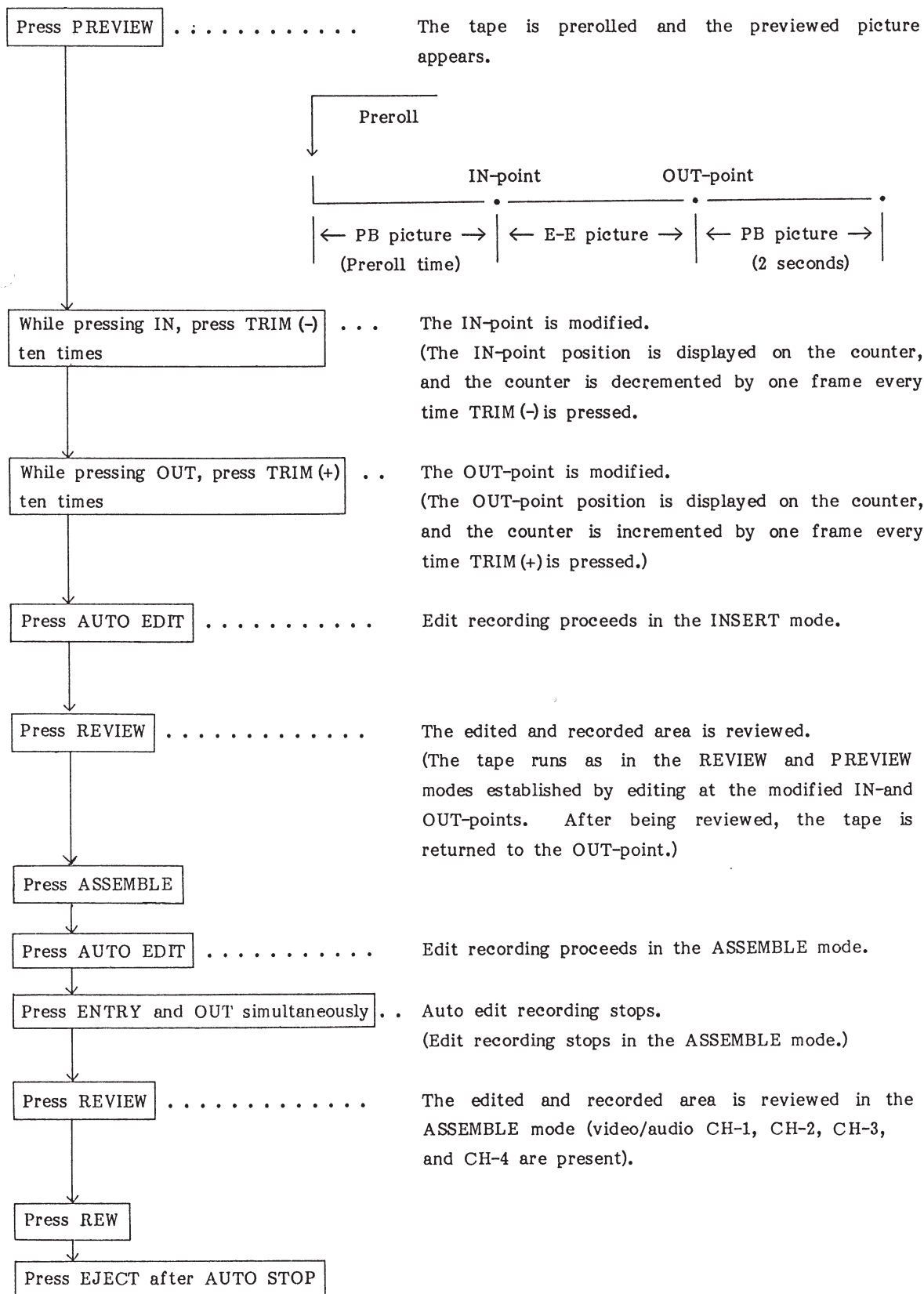
- . Select switch setting;

POWER	: ON
REMOTE/LOCAL	: LOCAL
PB,PB/EE	: PB
INPUT SELECT	: COMPOSITE

#### Action

#### Check that

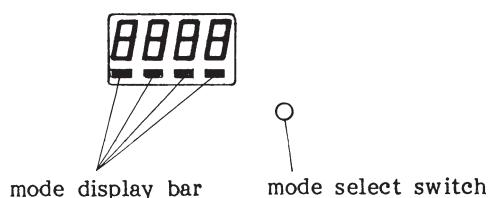




## 3-2. DIGITAL HOURS METER

### 3-2-1. Outline

When you open the Function Control Panel, a digital hours meter can be seen on the left of the chassis. The hours meter has four display modes. The accumulated elapsed operation time or the number of operations is displayed for every mode. It is recommended to perform the periodic checks and maintenance based on the hours meter.



**Note:** The hours meter, which has a built-in battery, should be replaced every 3 years.

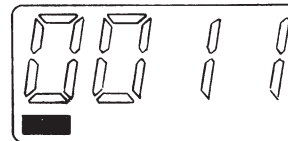
### 3-2-2. Description of the Display Mode

1. T1: OPERATION METER mode
  - . Displays accumulated time that the power of the unit has been turned on.
2. T2: DRUM RUNNING METER mode
  - . Displays accumulated rotation time of the drum in the THREADING END mode.
3. T3: TAPE RUNNING METER mode
  - . Displays accumulated tape running time in the F.FWD REW, PLAY, SEARCH, REC, and EDIT modes (not including the STILL mode).
4. CT: THREADING/UNTHREADING COUNTER mode
  - . Displays accumulated number of threading and unthreading operations.

### . T1, T2, and T3

These modes display the accumulated time. The actual operation time is equal to the displayed value multiplied by 10.

#### Example

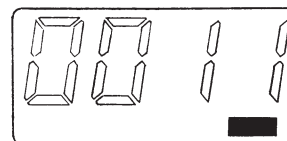


This display indicates between 110 hours 00 minutes 00 seconds and 119 hours 59 minutes 59 seconds (up to a maximum of 99,999 hours 59 minutes 59 seconds can be displayed).

### . CT

This mode displays the number of operations instead of the hours. The actual operation number is equal to the displayed value multiplied by 10.

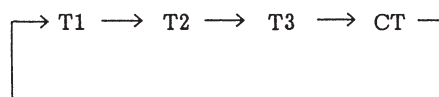
#### Example



This display indicates between 110 and 119 operations.

### 3-2-3. Mode Selection

When the mode select switch is pressed, the display rotates in the sequence shown below.



When the mode is set, the mode display bar in the designated mode lights or blinks. The VTR operation status at that time is described below.

When the mode is set, the mode display bar in the designated mode lights or blinks. The VTR operation status at that time is described below.

Mode	Lights	Blinks
T1	. VTR power is off.	. VTR power is on.
T2	. VTR power is off. . VTR power is on in a mode other than THREADING END.	. Drum is rotating in the THREADING END mode.
T3	. VTR power is off. . VTR power is on in a mode other than F.FWD, REW, PLAY, SEARCH, REC, or EDIT.	. Tape is running in the F.FWD, REW, PLAY, SEARCH, REC, or EDIT mode.
CT	_____	. Every time if VTR power is on or off.

### 3-3. MAINTENANCE AFTER REPAIRS

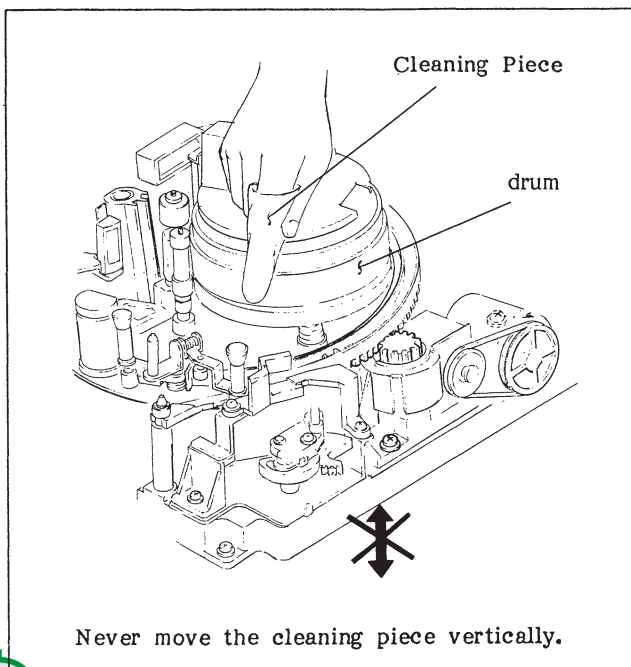
Perform the following maintenance after repairs regardless of the unit operating hours:

1. Video heads and stationary heads cleaning.  
(Refer to Sections 3-3-1 and 3-3-2.)
2. Tape movement area cleaning.  
(Refer to Section 3-3-3.)

**NOTE:** Wait until the cleaning fluid evaporates completely before inserting a cassette tape.

#### 3-3-1. Cleaning Procedure of the Video Head

Press a cleaning piece moistened with cleaning fluid and turn the drum slowly with hand.



**NOTE:** Never move the cleaning piece in the vertical direction of the head tip.

- . Clean the head with the power off.

#### 3-3-2. Cleaning Procedure of the Stationary Heads

Clean with a cleaning cloth moistened with cleaning fluid.

#### 3-3-3. Cleaning Procedure of the Tape Movement Areas

Wipe the tape bearing surfaces (of the tape guides, drum, capstan and pinch roller) with a cleaning piece moistened with cleaning fluid.

**NOTE:** Do not clean the surface of the condensation sensor on the lower drum with the moistened cleaning piece; clean it with a dry cloth.

### 3-4. PERIODIC CHECK

To obtain the higher function and performance of the unit or the longer lives of the unit and tape, perform the periodic checks below according to the hours meter reading on the front panel.

Item	Part No.	Hours meter mode	Replacement	Remarks
Upper drum replacement	A-6762-403-A	T2	1,000 H	The video head life is greatly affected by operational conditions and tapes. Clean every 500 hours.
Cleaning roller replacement	X-3675-858-1	T2	1,000 H	
Brush replacement	A-6050-645-A	T2	3,000 H	
Slip ring replacement	A-6050-649-A	T2	3,000 H	Clean every 1,000 hours with a designated jig.
Pinch roller replacement	X-3717-215-3	T3	1,000 H	Clean every 500 hours.
Lower drum replacement	A-6050-504-A	T2	3,000 H	Clean the drum's tape transport surface every 500 hours.
TG1 tape guide replacement	A-6746-027-C	T3	3,000 H	
TG2 tape guide replacement	A-6746-028-C	T3	3,000 H	
TG3 tape guide replacement	A-6746-029-D	T3	3,000 H	
TG4 tape guide replacement	A-6746-030-C	T3	3,000 H	
Replacement of tape guide's upper and lower flanges on threading ring	3-717-267-01 3-680-812-00	T3	3,000 H	
Reel motor replacement	A-6737-175-C	T3	3,000 H	
Capstan motor replacement	8-835-259-03	T3	3,000 H	
AUDIO/TC head replacement	8-825-623-22	T3	3,000 H	Clean every 500 hours.
Audio confi head replacement	8-825-771-11	T3	3,000 H	Clean every 500 hours.
CTL head replacement	8-825-554-73	T3	3,000 H	Clean every 500 hours.
	8-825-554-74	—	—	Not replacement

Item	Part No.	Hours meter mode	Replacement	Remarks
Full Erase head replacement	8-825-770-72	T3	3,000 H	Clean every 500 hours.
Threading belt (LM belt) replacement	3-688-066-02	CT T2	100,000 times 4,000 H	Replace either of them.
Gear box replacement	A-6750-213-J	CT	200,000 times	Do not replace the threading motor only, but whole gear box.
T gear 1 assembly replacement	X-3717-250-2	CT	100,000 times	
Fan motor replacement	1-541-431-31	T1	10,000 H	
S/T brake solenoid replacement	1-454-417-41	CT	200,000 times	
Pinch solenoid replacement	1-454-338-00	CT	200,000 times	Used in LMS system.
	1-454-338-00	T3	3,000 H	Used in systems other than LMS.
Cassette-up compartment replacement	A-8269-966-A	CT	100,000 times	Do not replace the cassette-up compartment motor only, but whole cassette-up compartment.
Main brake replacement	A-6741-066-A	CT	200,000 times	
Ring roller replacement	3-675-866-00	CT	200,000 times	After ring roller replacement, perform the tape run adjustment and the tracking adjustment. Replacement during overhauling is recommended.
Hours meter replacement	1-548-152-11	Replace every 3 years.		The digital hours meter has an internal battery.



### 3-4-2. Periodic Cleaning

It is recommended to clean the tape path system every 50 hours and 200 hours in order to maintain stable performance for an extended period.

Required tools

Cleaning tape : BCT-5CLN or BCT-D12CL

Cleaning piece : 3-184-527-01

Cleaning fluid : 9-919-573-01

Every 50 hours : Cleaning using the cleaning tape

1. Insert the cleaning tape cassette.
2. Press the EJECT and PLAY buttons at the same time.  
The head cleaning starts.
3. The cleaning tape is automatically ejected after five seconds.

Every 200 hours : Cleaning using the cleaning tape and the cleaning piece

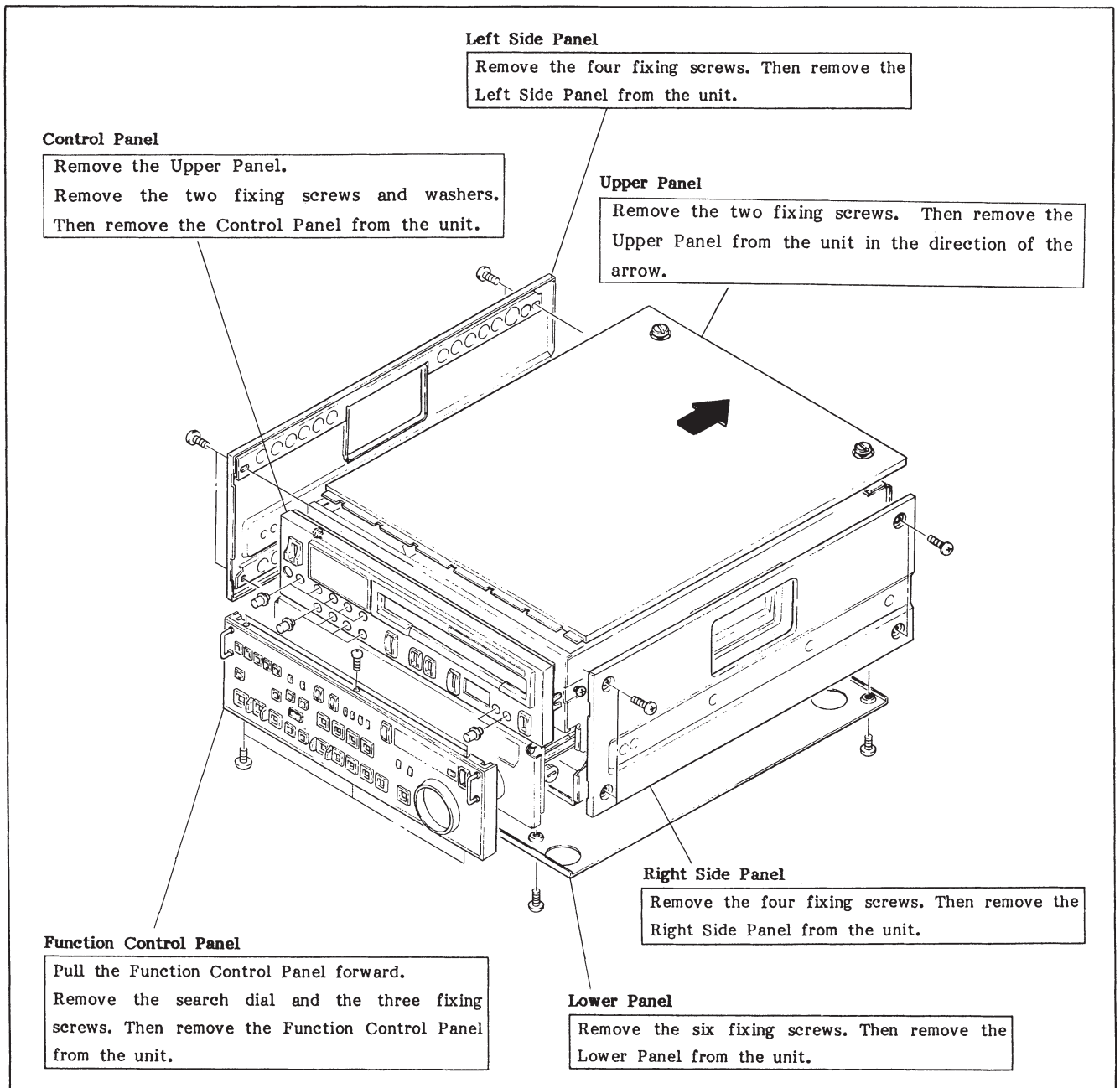
1. Insert the cleaning tape cassette.
2. Press the EJECT and PLAY buttons at the same time.  
The head cleaning starts.
3. The cleaning tape is automatically ejected after five seconds.
4. Wipe the head drum and the tape path system with the cleaning piece moistened with cleaning fluid.  
(Refer to sections 3-3-1, 3-3-2 and 3-3-3 for the cleaning procedure.)
5. Wipe the head drum and the tape path system with a clean dry cleaning piece.



## SECTION 4

### SERVICE INFORMATION

#### 4-1. REMOVAL OF CABINET

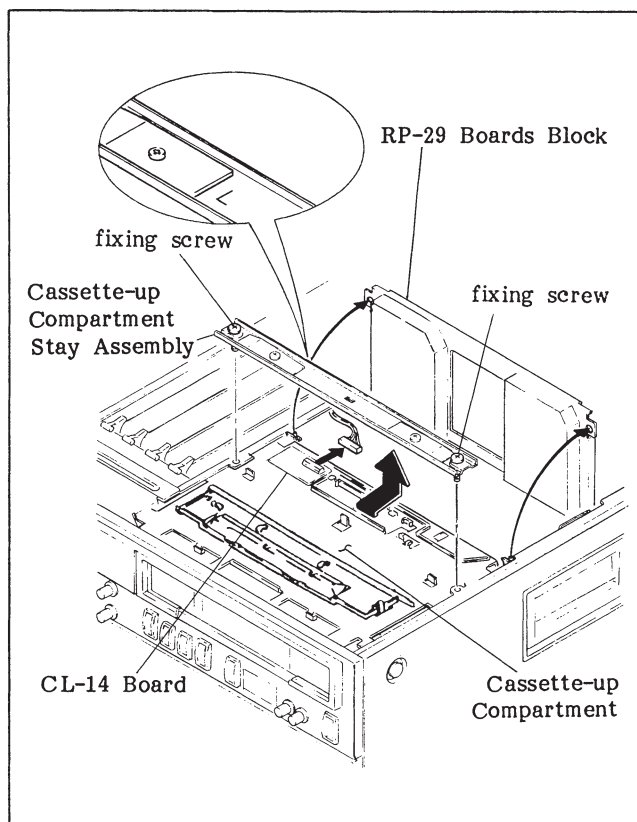


#### 4-2. REMOVAL/INSTALLATION OF CASSETTE-UP COMPARTMENT

1. Remove the Upper Panel. (Refer to Section 4-1.)
2. Open the RP-29 Boards Block.
- . **Removal**
3. Loosen the two fixing screws and remove the Cassette-up Compartment Stay. (This screw has a retainer.)
4. Disconnect connector CN331 on the CL-14 Board.
5. Move the Cassette-up Compartment in the direction as shown in the figure. Lift the Cassette-up Compartment Block slowly.

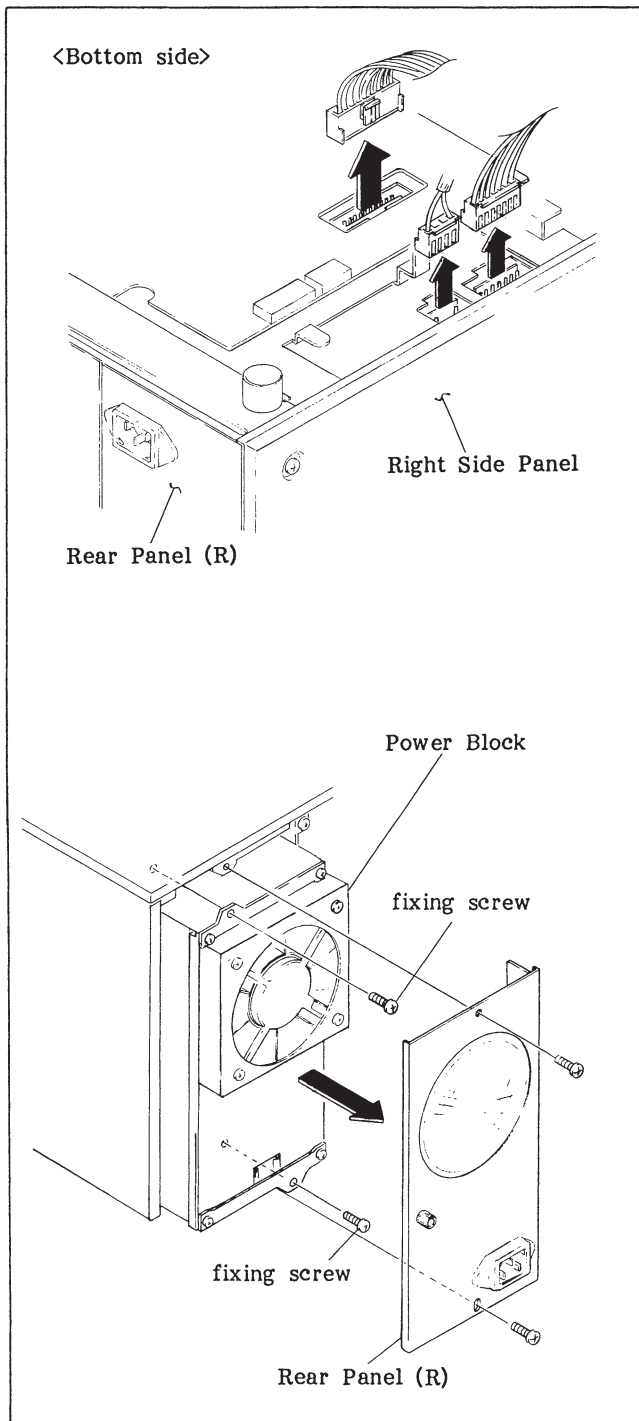
##### . Installation

6. Install the Cassette-up Compartment.
7. Make sure that the marked "L" on the Cassette-up Compartment Stay is on the left side; tighten the screw. And then tighten the screw on the right side.



#### 4-3. REMOVAL OF THE POWER BLOCK

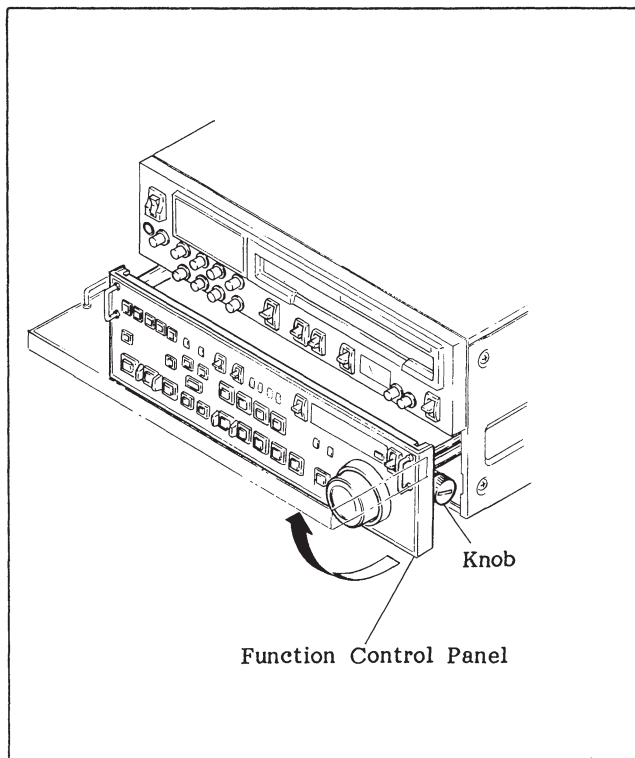
1. Remove the Lower Panel.
2. Remove the Shield Plate of the MB-116 Board.
3. Disconnect the connectors as shown in the figure.
4. Remove the Rear Panel (R).
5. Remove the two fixing screws as shown in the figure and remove the Power Block.



#### 4-4. HOW TO PULL IN/OUT THE FUNCTION CONTROL PANEL

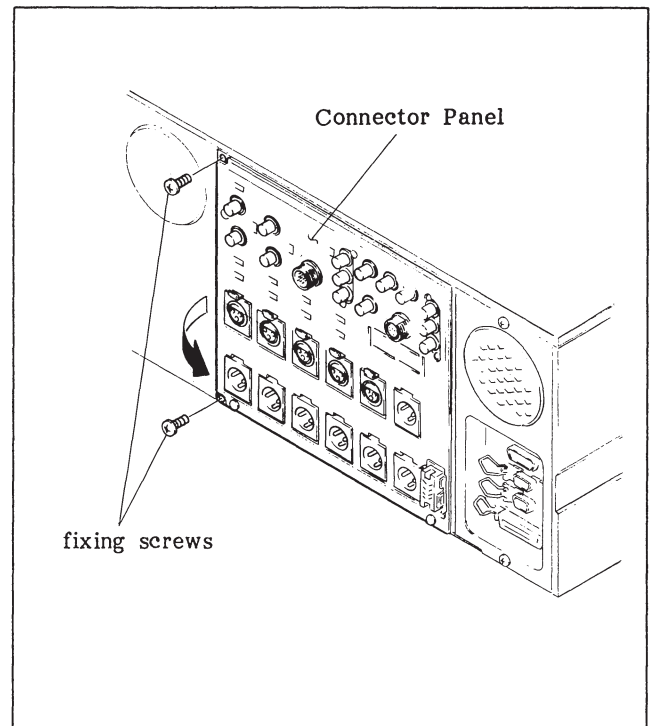
1. Pull the Function Control Panel on both right and left sides forward. Move the panel forward.
2. Pull it more forward to fix the panel. Lift the Function Control Panel. The panel moves maximum 90 degrees (the fixed position is selectable by five steps).
3. When putting the panel back in the unit, replace the panel and it into the unit.

**NOTE:** After using the panel, be sure to put it back into the unit.



#### 4-5. HOW TO OPEN THE CONNECTOR PANEL

Remove the two fixing screws shown in the figure, then open the Connector Panel in the direction of the arrow.



#### 4-6. NOTE FOR CHECK AND MAINTENANCE OF PRINTED CIRCUIT BOARD

Be sure to turn the power off before inserting or removing printed circuit boards.

#### 4-7. EXTENSION BOARD

The three extension board types are supplied in the BVW-75. The Amp chassis printed circuit boards can be serviced using the extension board. Simply insert the extension board into the Amp chassis and connect the circuit board to be serviced to the end of the extension board.

Extension board	Connectable Printed Circuit Board
EX-116	SY-61, SY-64
EX-134	AFM-1, AU-75, AU-76, DEC-27, DT-13, DT-14, EN-48, MD-46, SV-82, SV-83, SV-84, TBC-9, TC-40, VO-18
EX-151	DEC-42, DM-56, TBC-7, TBC-8

**NOTE:** In the EX-134 Board, the lever for removing board is installed only on one side.

#### 4-8. SPARE PARTS

(1)

The shaded and  $\Delta$ -marked components are critical to safety.

Replace only with the same components as specified.

(2)

Replacement parts supplied from the Sony Parts Center will sometimes have a different shape and outside view from the parts which are used in the unit. This is due to "accommodating improved parts and/or engineering changed" or "standardization of genuine parts".

- . This manual's exploded views and electrical spare parts lists indicate the part numbers of "the present standardized genuine parts".
- . Regarding engineering part changes by our engineering department, refer to Sony service bulletins and service manual supplements.

(3)

The parts marked with "s" in the SP column of the exploded views and electrical spare parts lists are normally stocked for replacement purposes. The parts marked with "o" in the SP column are not normally required for routine service work. Orders for parts marked with "o" will be processed, but allow for additional delivery time.

#### **4-9. HOW TO OPERATE THE UNIT WITHOUT INSTALLING CASSETTE TAPE**

The following procedures are described without installing the Cassette-up Compartment.

##### **1. Threading**

- . Turn the power on. The threading ring rotates in a counterclockwise direction automatically, and the unit is put into the threading completion mode.

##### **2. PLAY**

- . Set DIP switch S106 on the SY-61 board to ON and set System Setup Item 902 to 1. When the PLAY button is pressed, the unit enters the PLAY mode. After adjustment is completed, set the DIP switch and setup menu to the former mode.

##### **3. Unthreading**

- . Press the EJECT button after the unit is put into the threading completion mode. The threading ring rotates in a clockwise direction.

##### **4. Search**

- . Turn the SEARCH dial after the unit is put into the threading completion mode.

##### **5. F.FWD and REW**

- . Select the DIP switch and setup menu as in Step 2. When the F.FWD or REW button is pressed, the unit enters the F.FWD or REW mode. After adjustment is completed, set the DIP switch and setup menu to the former mode.

##### **6. REC**

Select the DIP switch and setup menu as in Step 2. (After adjustment is completed, set them to the former mode.)

##### **Small Cassette**

- . Press the PLAY and the REC buttons while pressing the MISS-REC switch for small cassette on the left side after the unit is put into the threading completion mode.

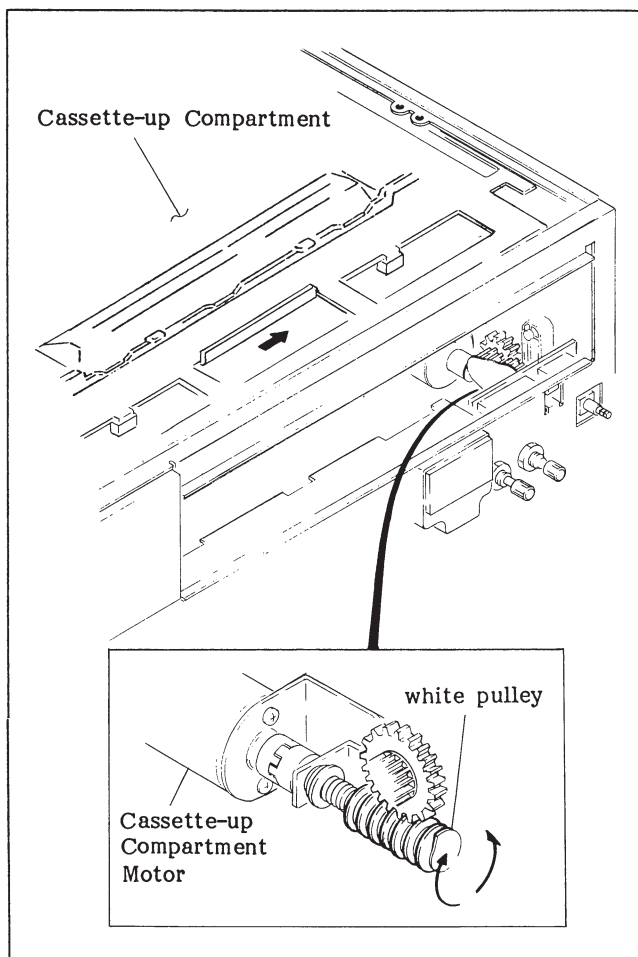
##### **Large Cassette**

- . Press the PLAY and the REC buttons while pressing the MISS-REC switch for large cassette on the right side after the unit is put into the threading completion mode.

#### 4-10. HOW TO REMOVE A CASSETTE WHEN THE TAPE IS SLACKENED IN THE UNIT

When the tape in the unit is slack, remove the cassette tape by the following procedures:

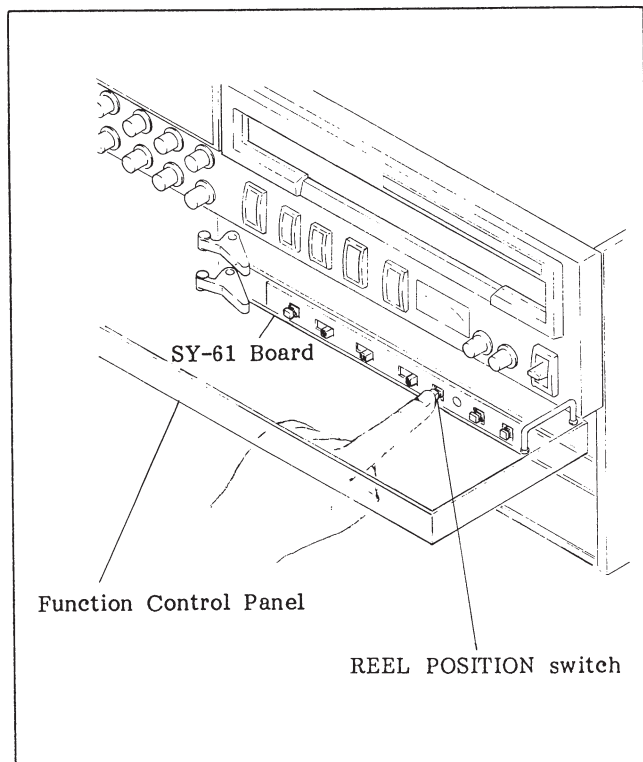
1. Turn the power off.
2. Open the RP-29 Boards Block.
3. Turn the pulley of the Gear Box Block until the Pinch Roller is enters the EJECT completion mode.
4. Remove the Cassette-up Compartment Stay.
5. Disconnect connector CN331 on the CL-14 Board of the Cassette-up Compartment.
6. Pull out the function control Panel, raise it 90 degrees, and fix it.
7. Turn the white pulley as shown in the figure by hand while holding the cassette lid by hand to prevent it closing so that the Cassette-up Compartment moves up.
8. Stop rotating the white pulley just before the Cassette-up Compartment moves to the surface.
9. Lift the Cassette-up Compartment slowly from the unit while holding the cassette lid.
10. Close the cassette lid carefully so that it is not damaged.
11. Remove the cassette from the Cassette-up Compartment.
12. Release the lock of the cassette lid, wind the tape into the cassette by turning the reel hub on the back of the cassette by hand.
13. Turn the pulley as Step 7 so that the stage of the Cassette-up Compartment moves the cassette out position.
14. Install the Cassette-up Compartment into the unit.
15. Connect the connector, then install the Cassette-up Compartment Stay.
16. Clean the Motor Belt of the Gear Box Block with a cloth moistened with cleaning fluid.
17. Locate the cause of the trouble and remedy the problem.





#### 4-11. HOW TO CHECK THE REEL TABLE OPERATION

- . When power is turned on, you can check whether the Reel Table moves to the specified position without inserting the cassette tape.
  - . If the Cassette-up Compartment is not installed when the mechanism is adjusted, the Reel Table can be moved to the position corresponding to an L or S cassette according to the procedures below.
1. Disconnect connector CN331 on the CL-14 Board of the Cassette-up Compartment.
  2. Turn the power on.
  3. Press the EJECT button on the Function Control Panel.
  4. Open the Function Control Panel and press the REEL POSITION select switch on the SY-61 Board.



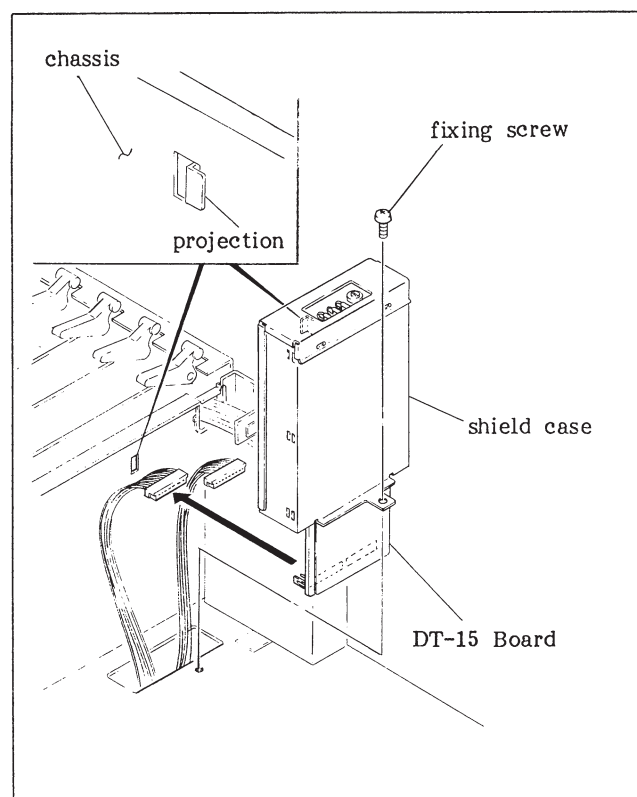
5. The Reel Table moves.  
The set enters S mode from L mode or enters L mode from S mode. When the REEL POSITION select switch is pressed again, the set returns to the original mode.

#### 4-12. SERVICE OF THE CIRCUIT BOARD

The method of servicing circuit boards (except plug-in boards) is described below.

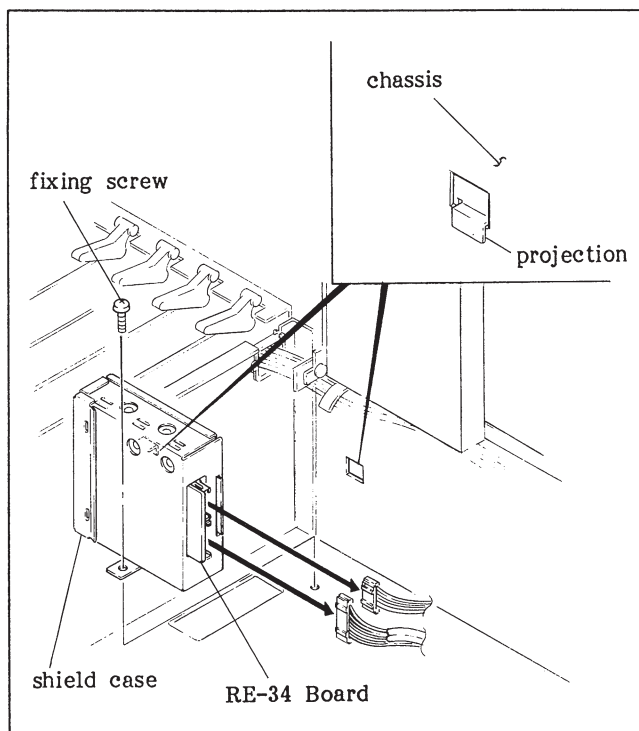
##### DT-15 Board

1. Remove the Upper Panel.
2. Open the RP-29 Boards Block.
3. Remove a fixing screw of the shield case.
4. Disconnect the harness connectors.
5. Remove the DT-15 Board from the unit.
6. When installing, hook the projection of the shield case into the chassis.



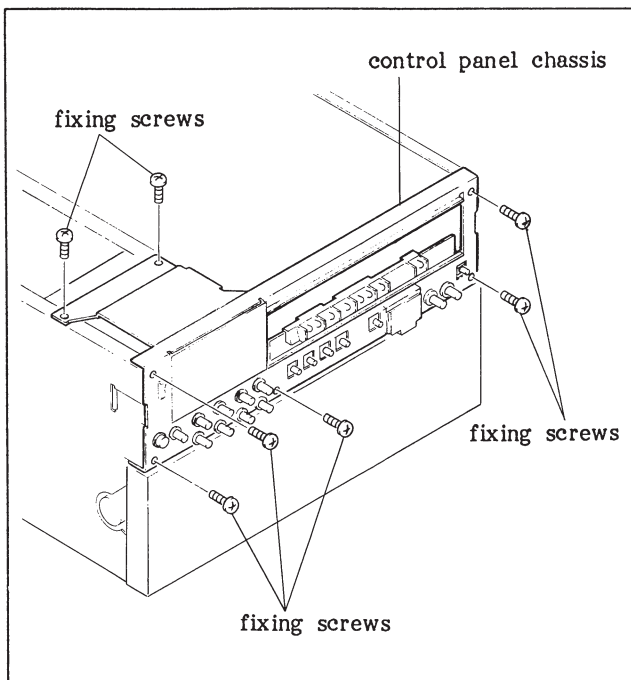
### RE-34 Board

1. Perform as described in Steps 1 and 2 of "DT-15 Board".
2. Remove a fixing screw of the shield case.
3. Disconnect the harness connectors.
4. Remove the RE-34 Board from the unit.
5. When installing, hook the projection of the shield case into the chassis.

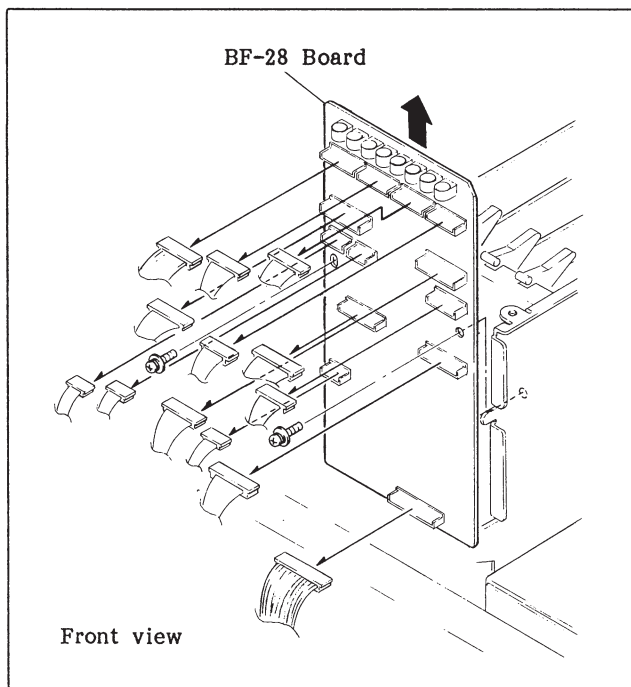


### BF-28 Board

1. Remove the Upper Panel and Control Panel.
2. Remove the Cassette-up Compartment.
3. Remove the seven fixing screws shown in the figure, remove the control panel chassis.

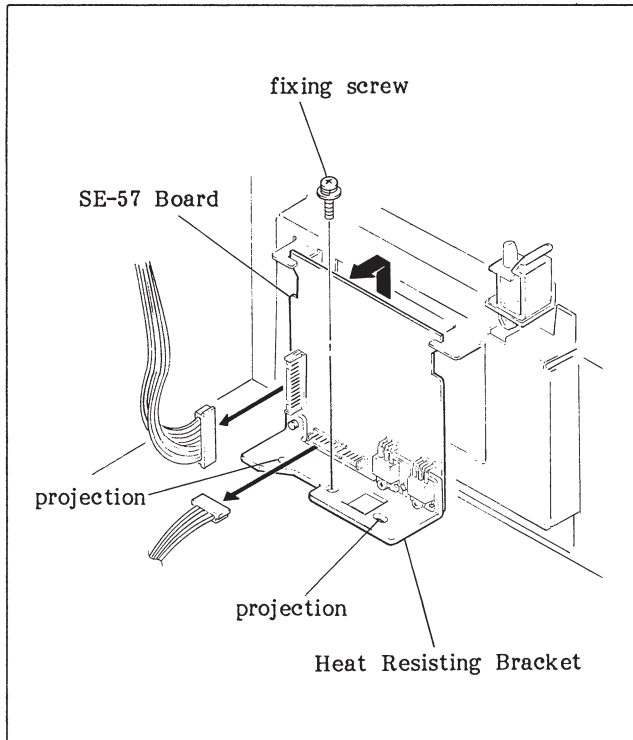


4. Disconnect the connectors.
5. Remove the two fixing screws, remove it from the unit.



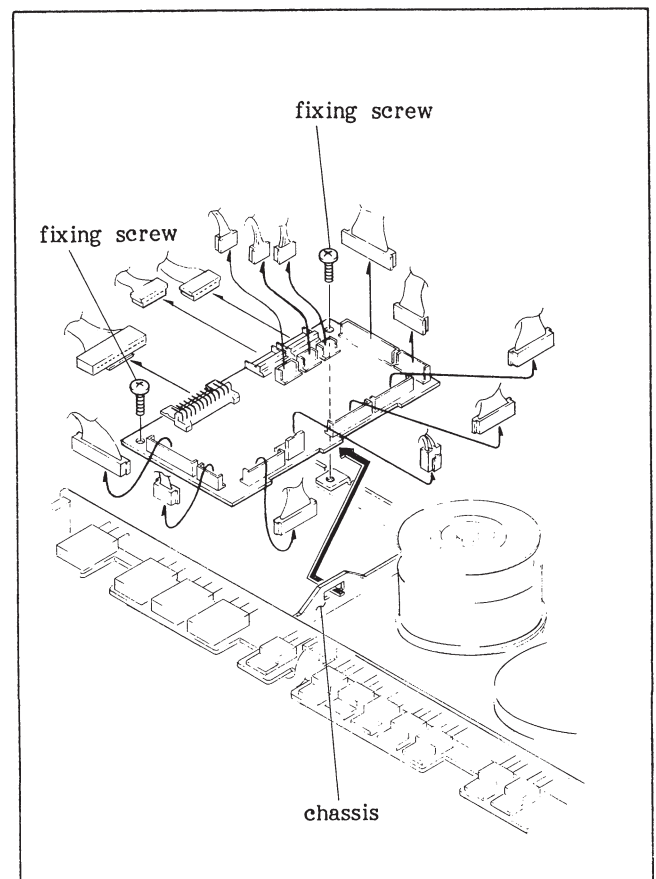
### SE-57 Board

1. Remove the Upper Panel.
2. Open the RP-29 Boards Block.
3. Remove a fixing screw of the Heat Resisting Bracket.
4. Disconnect the connectors.
5. Remove the SE-57 Board from the unit.
6. When installing, fit the two projections of the Heat Resisting Bracket into the chassis.



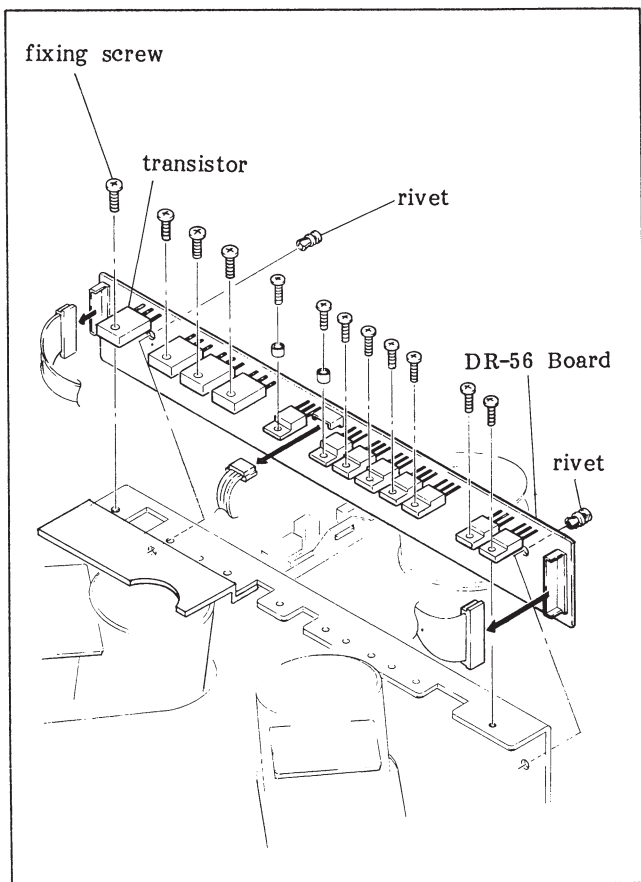
### RE-28 Board

1. Set the Reel Table to S mode by pressing the REEL POSITION select switch on the SY-61 Board.
2. Remove the SY-61 and SY-64 Boards.
3. Remove the Lower Panel.
4. Remove the Reel Table Transfer Motor Block.
5. Disconnect the connectors.
6. Remove the two fixing screws and remove the RE-28 Board from the unit.
7. When installing, hook one side of the RE-28 Board into the chassis and tighten the screws.



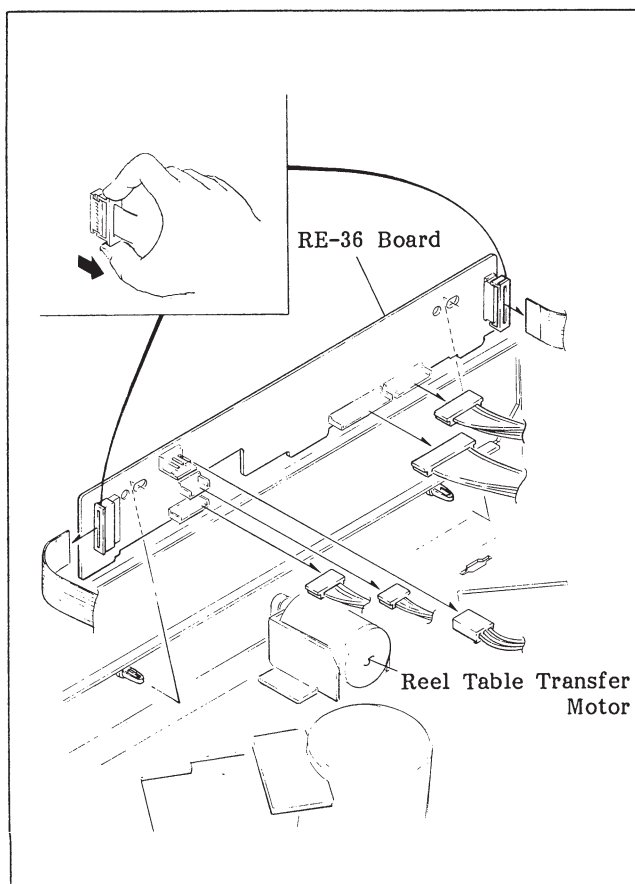
#### DR-56 Board

1. Remove the SY-61 and SY-64 Boards.
2. Remove the Lower Panel.
3. Disconnect the connectors.
4. Remove the two rivets and twelve fixing screws of the transistors.
5. Remove the DR-56 Board from the unit.



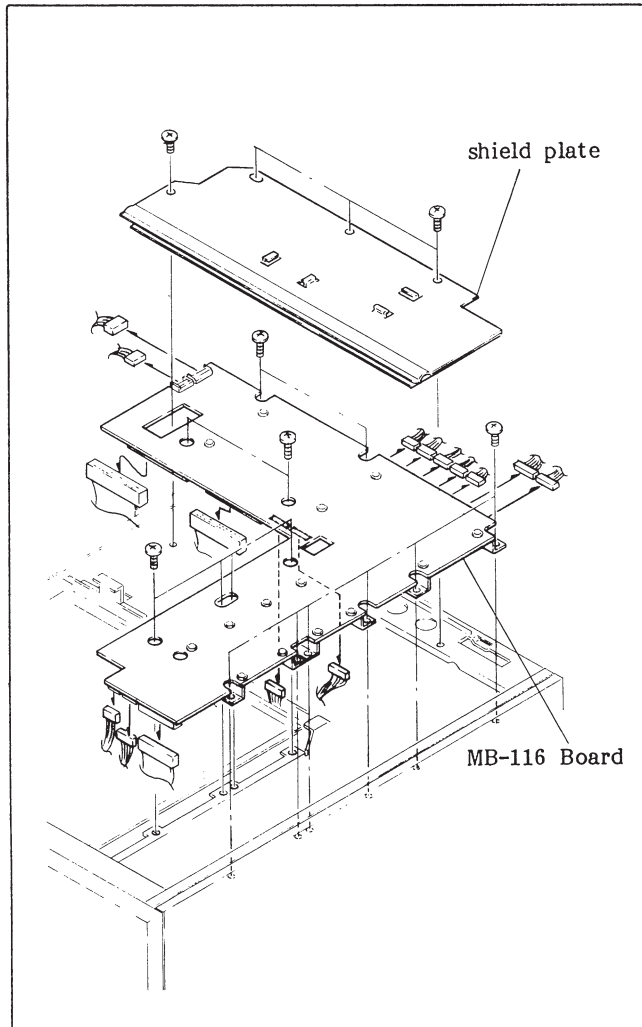
#### RE-36 Board

1. Put the unit into the small cassette mode to turn the Reel Table Transfer Pulley.
2. Remove the SY-61 and SY-64 Boards.
3. Remove the Lower Panel.
4. Remove the Reel Table Transfer Motor.
5. Remove the RE-36 Board from the unit.
6. Disconnect the connectors and flat cables.



### MB-116 Board

1. Remove the Upper Panel.
2. Remove the plug-in type printed circuit boards.
3. Disconnect the connectors on the inside.
4. Remove the Lower Panel.
5. Remove the shield Plate of the MB-116 Board.
6. Remove the fourteen fixing screws of the MB-116 Board.
7. Disconnect the connectors.



### SY-61 and SY-64 Boards

1. Open the Function Control Panel.
2. Loosen the fixing screws and slide the SY stopper in the direction indicated by arrow A.
3. Tighten the fixing screws, then remove the SY-61 and SY-64 Boards.
4. Insert the Boards, then loosen the fixing screws. Slide the SY stopper in the direction indicated by arrow B while slightly pulling the Board Lever toward you.
5. Tighten the fixing screws.

**NOTE:** When the set is transported, be sure to fix the SY stopper as shown in Fig. 1.

Fig. 1

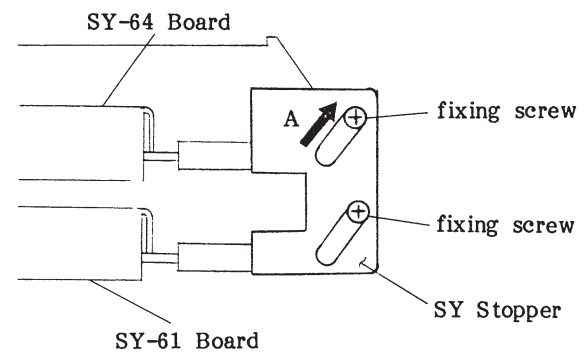
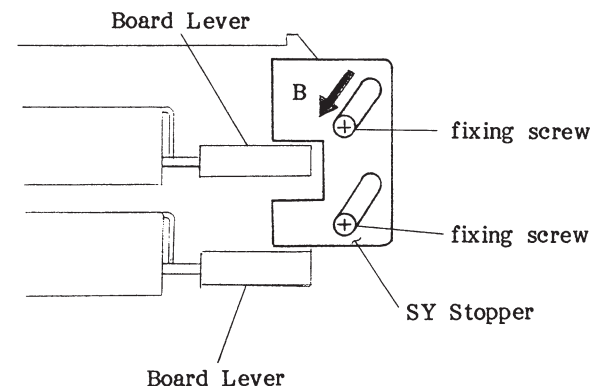
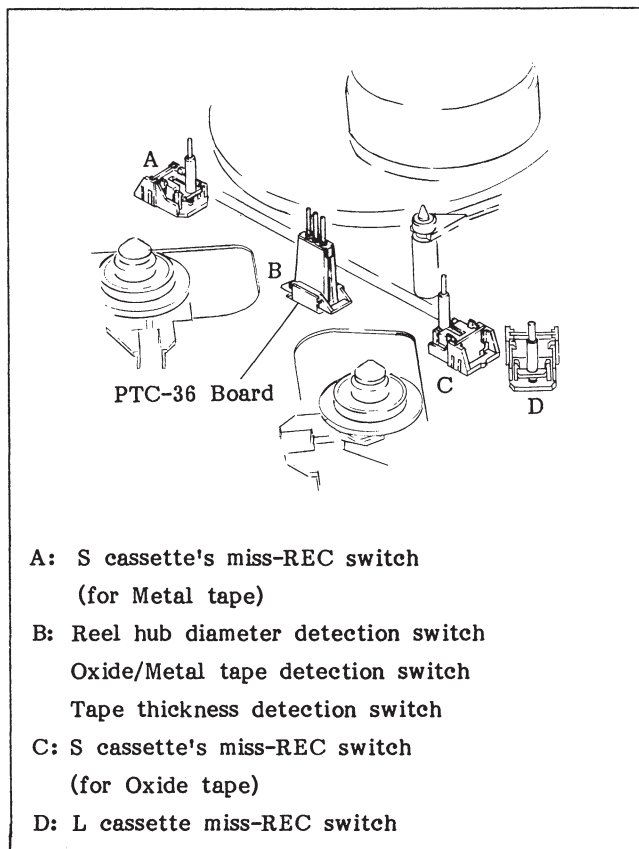


Fig. 2



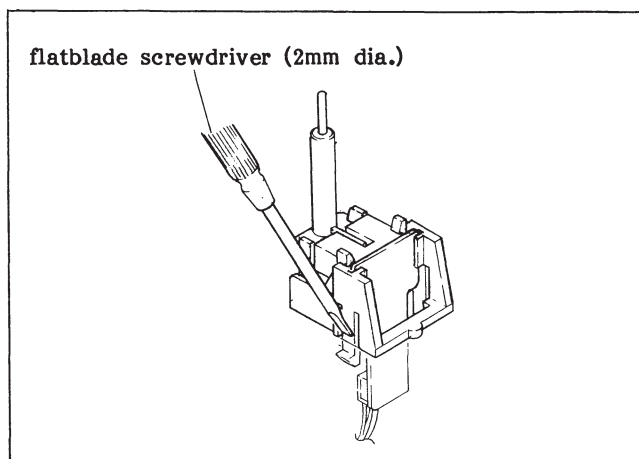
#### 4-13. HOW TO REMOVE THE DETECTION SWITCHES

The method of removing of the four Detection Switches is described below.



- When removing switches A, C, and D

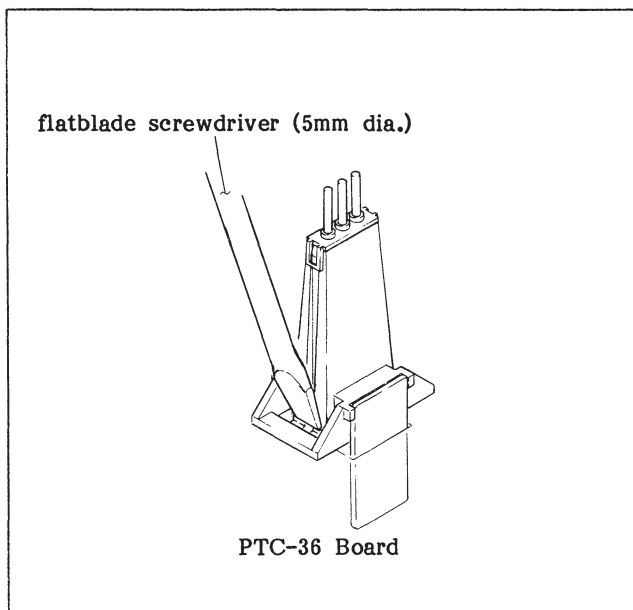
While pushing the leg of one side with a flatblade screwdriver (2 mm dia.), lift it, then pull out the switch.



- When removing switch B

While pushing the legs of one side (there are two legs each on the right and left sides) with a flatblade screwdriver (5 mm dia.), lift it. Then pull out the switch.

When installing it, be sure to install the PTC-36 Board in the front side.



**NOTE:** The detection switch lifts lightly so as not to disconnect the connector.

#### 4-14. NOTE FOR THE SLIP RING

Handle the slip ring on the drum with care because it is easy to bend.

#### 4-15. HOW TO OPEN THE CASSETTE LID

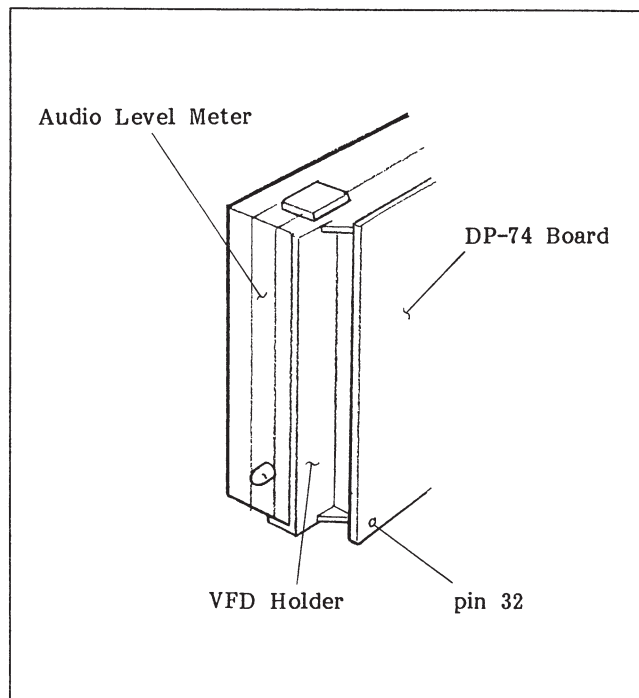
**Large cassette:** The lid is opened by releasing the projecting locks on both sides of the cassette.

**Small cassette:** The lid is opened by releasing the projecting lock on the left side as viewed from the top of the cassette.

#### 4-16. REPLACEMENT OF AUDIO LEVEL METER

Repair or replace the audio level meter on the upper left of the front panel and install it on the front chassis as follows:

1. Check that pin 32 of the audio level meter is less than 1mm long from the DP-74 board.
2. If pin 32 is more than 1mm long, it may touch the shield case. Cut off the pin using a nipper so that it is less than 1mm.



#### 4-17. FIXTURE

Part number	Description	For use
J-6001-820-A	Drum Eccentricity Gauge (3)	Upper drum eccentricity adjustment
J-6001-830-A	Drum Eccentricity Gauge (2)	
J-6001-840-A	Drum Eccentricity Gauge (1)	
J-6031-820-A	Multi Connector Cable (BIBNC)	Video alignment
J-6080-011-A	Reel Table Tension Gauge	Brake torque adjustment
J-6086-570-A	Flatness Plate	Audio/TC head slantness adjustment
J-6087-000-A	Drum Eccentricity Gauge (5)	Upper drum eccentricity adjustment
J-6152-450-A	Wire Clearance Gauge	Clearance check
J-6190-800-A	Tension Regulator Slantness Check Tool	Tension regulator slantness check
J-6329-350-A	Reel Table Height Gauge	Reel table height adjustment
J-6320-870-A	Reel Motor Shaft Slantness Check Gauge	Reel motor shaft slantness adjustment
J-6320-880-A	Cassette Reference Plate (L)	Reel table adjustment
2-034-697-00	Cleaning Piece	Cleaning
7-723-902-00	Inspection Mirror	Video tracking adjustment
7-732-050-20	Tension Scale (50 g full scale)	Tension adjustment
7-732-050-30	Tension Scale (100 g full scale)	
8-960-096-01	Alignment Tape, CR2-1B	Video tracking tape
8-960-096-41	Alignment Tape, CR5-1B	Video and audio alignment for recorder and player (metal particle tape)
8-960-096-44	Alignment Tape, CR5-2A	Video and servo alignment for recorder and Player (oxide tape)
8-960-097-45	Alignment Tape, CR8-1A	Audio alignment for recorder and player (oxide tape)
9-911-053-00	Thickness Gauge	Clearance check
9-919-573-01	Cleaning Fluid	Cleaning
Standard Products	Head Demagnetizer (HE-4)	Head demagnetizing



## SECTION 5

### REPLACEMENT OF MAJOR PARTS

#### 5-1. REPLACEMENT OF THE REEL MOTOR

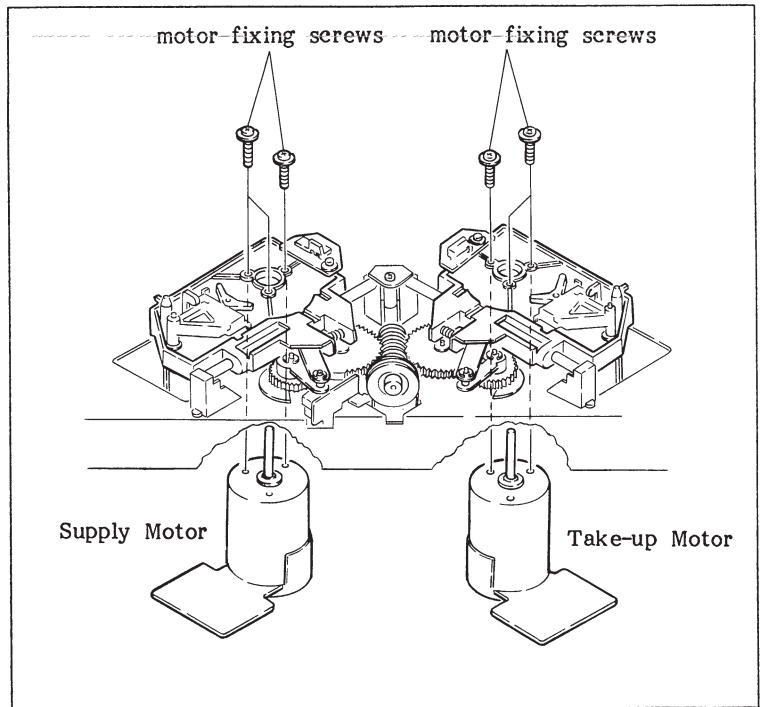
- Replacement procedures for the Take-up Reel Motor and the Supply Reel Motor are the same.

**Tool:** Hex. key (across flat has 1.5 mm)

**Mode:** Unthreading end mode

**Replacement procedure:**

- (1) Open the Function Control Panel, remove the SY-61 and SY-64 Boards.  
(For the SY-64 Board, remove the cable from the KY-96 Board on the back of the Control Panel Block.)
- (2) Disconnect the three connectors of the RM-40 Board on the motor from the back of the unit.
- (3) Remove the Reel Table as described in replacement procedures (1) to (4) of Section 5-2, Replacement of the Reel Table.
- (4) Remove the three fixing screws of the motor as shown in the figure, replace it with a new one.
- (5) Perform the adjustments in Section 5-23.



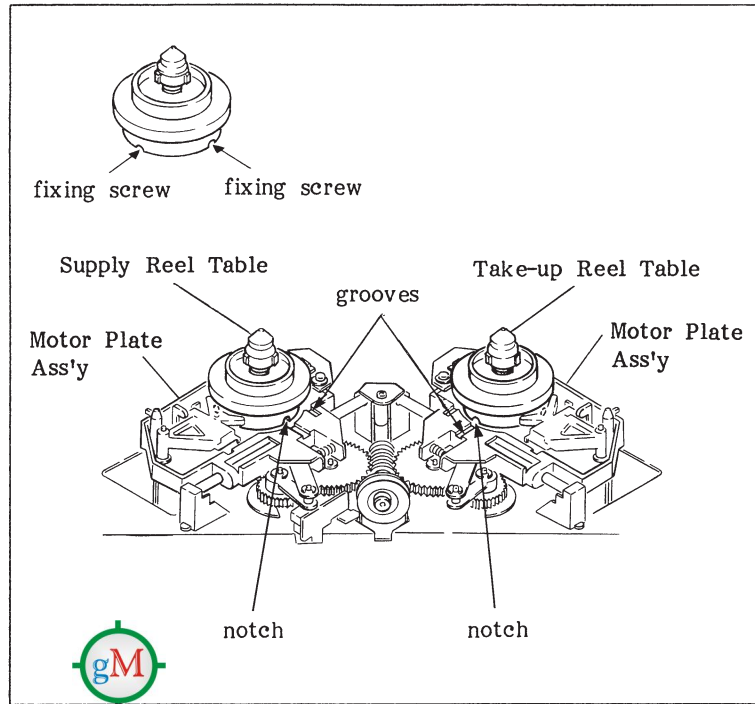
## 5-2. REPLACEMENT OF THE REEL TABLE

. Replacement procedures for the Take-up Reel Table and the Supply Reel Table are the same.

**Tool:** Hex. key (across flat has 1.5 mm)

### Replacement procedure:

- (1) Turn the Reel Table by hand so that the one of the two notches under the Reel Table is in the groove of the Motor Plate Ass'y.
- (2) Insert the hex. key along the groove into the Reel Table, loosen the fixing screw.
- (3) Turn the Reel Table more so that the other notch is in the groove of the Motor Plate Ass'y.
- (4) Loosen the fixing screw of the Reel Table as described in procedure (2).
- (5) Replace the Reel Table with a new one. (Be careful not to drop the washer.)
- (6) Clean the outer circumference of the Reel Table with a cloth moistened with cleaning fluid.
- (7) Perform the adjustments in Section 5-23.

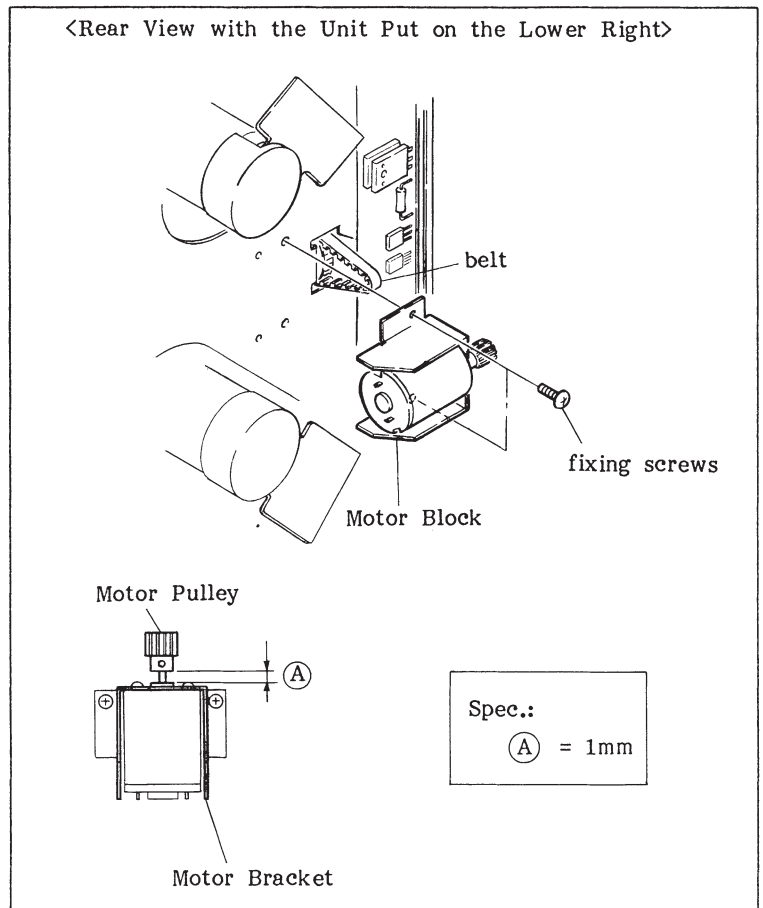


### 5-3. REPLACEMENT OF THE REEL TABLE TRANSFER MOTOR

**Tool:** Hex. key (across flat has 1.27 mm)

**Replacement procedure:**

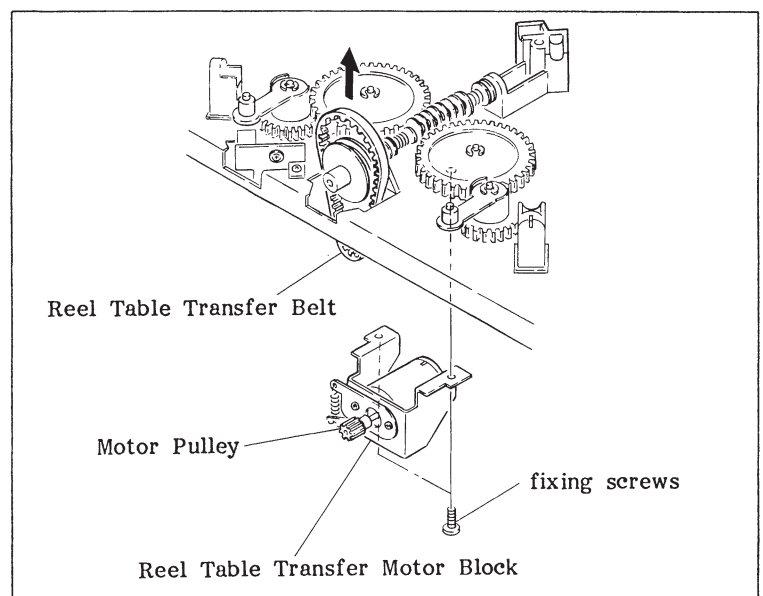
- (1) Remove the SY-61 and SY-64 Boards, Put on the unit right side down.
- (2) Remove the two fixing screws as shown in the figure, remove the Motor Block from the unit.
- (3) Unsolder the two motor leads.
- (4) Remove the setscrew of the Motor Pulley.
- (5) Remove the two fixing screws from the Motor Bracket, replace it with the new one.
- (6) Solder the white lead to the "+" terminal of the motor and the red lead to the other terminal.
- (7) Install the Motor Pulley so that the clearance between the pulley and the Motor meets the required specification.
- (8) Hook the Reel Table Transfer Belt to the Motor Pulley, then install the Motor Block on the unit.



### 5-4. REPLACEMENT OF THE REEL TABLE TRANSFER BELT

**Replacement procedure:**

- (1) Open the Function Control Panel. Remove the SY-61 and SY-64 Boards from the unit.
- (2) Remove the Reel Table Transfer Motor Block from the back side of the unit.
- (3) Remove the Reel Table Transfer Belt from the top of the unit, replace the belt with a new one.
- (4) Hook the belt to the Motor Pulley of the Reel Table Transfer Motor Block, install it in the unit.

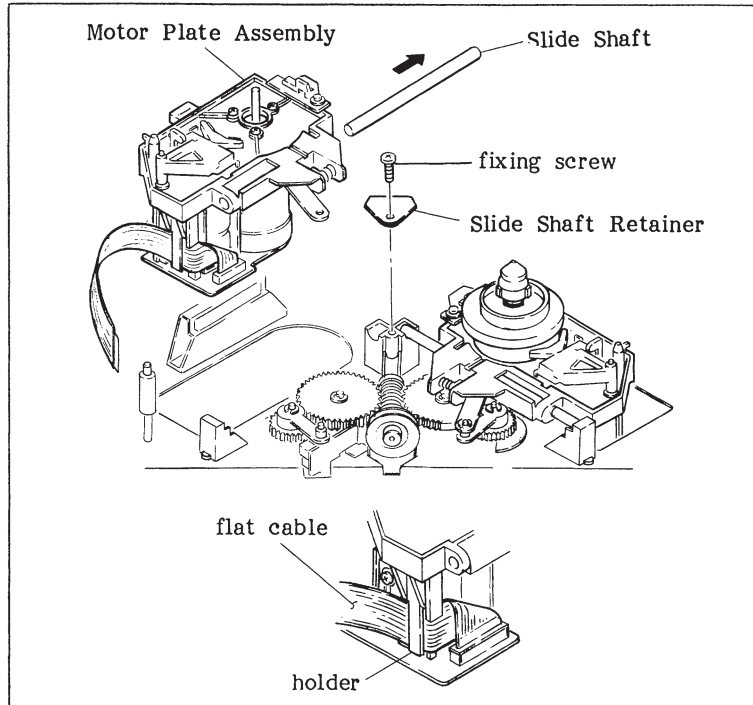


## 5-5. REPLACEMENT OF THE MOTOR PLATE ASSEMBLY

. Replacement procedures for the take-up side and the supply side are the same.

### Replacement procedure:

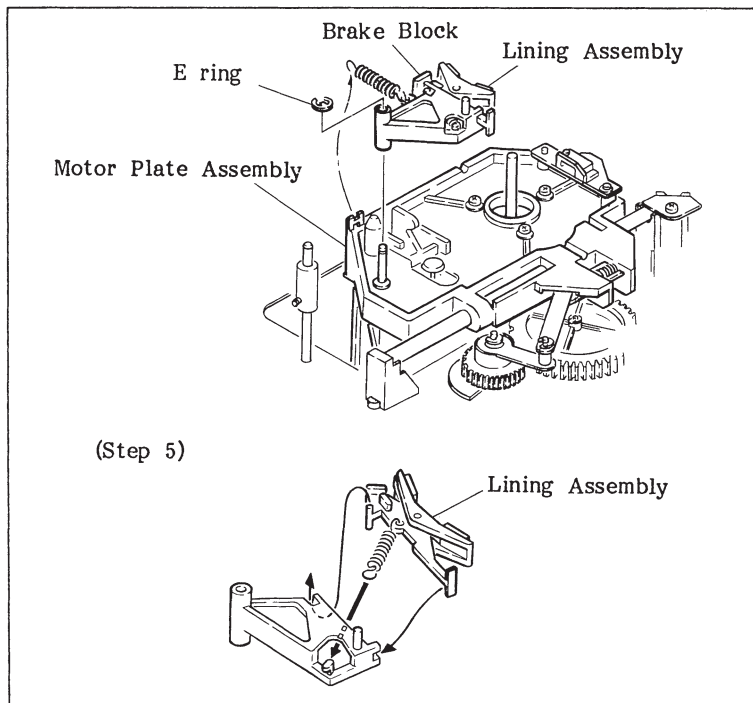
- (1) Remove the Reel Table as described in replacement procedures (1) to (4) of Section 5-2.
- (2) Remove the Slide Shaft Retainer.
- (3) Move the Slide Shaft in the direction of the arrow and remove it. Lift the Motor Plate Ass'y, disconnect the flat cable CN883 on the RM-40 Board.
- (4) Connect the flat cable to the RM-40 Board on the new Motor Plate Ass'y. Insert the flat cable into the holder as shown in the figure.
- (5) Clean the Slide Shaft with a cloth moistened with cleaning fluid.
- (6) Insert the Slide Shaft, and then install it in the unit.
- (7) Install the Slide Shaft Retainer.
- (8) Perform the adjustments in Section 5-23.



## 5-6. REPLACEMENT OF THE REEL TABLE BRAKE

### Replacement procedure:

- (1) Remove the Reel Table as described in replacement procedures (1) to (4) of Section 5-2.
- (2) Remove the E ring as shown in the figure.
- (3) Remove the spring on the Motor Plate Ass'y side.
- (4) Remove the Brake Block.
- (5) Remove the spring of the Brake Block as shown in the figure, then remove the Lining Ass'y.
- (6) Replace it with a new one, reassemble in the reverse order.



## 5-7. REPLACEMENT OF THE UPPER DRUM

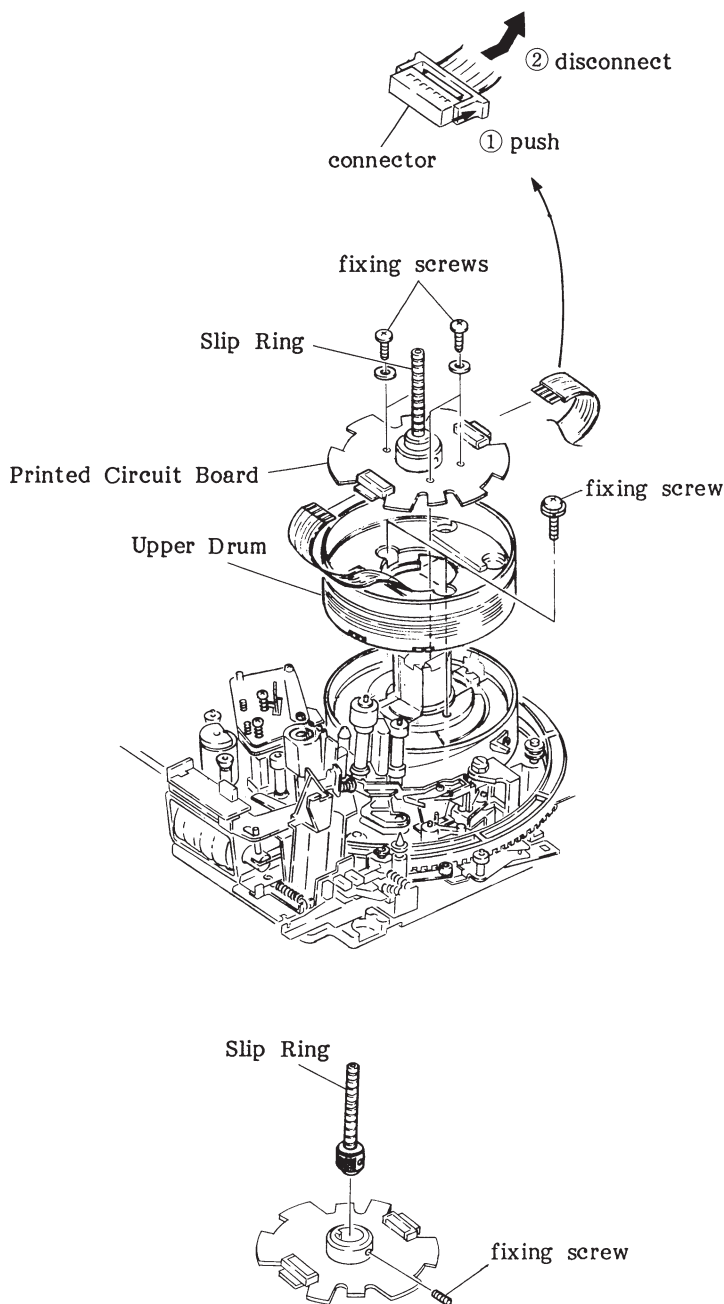
- . The Rotary Video Heads cannot be replaced individually, the entire Upper Drum Assembly must be replaced when any one of these heads fails.
- . The printed circuit board of the Upper Drum Assembly be able to use for the new drum.

**Tool:** Drum eccentricity gauge (1)  
Drum eccentricity gauge (2)  
Drum eccentricity gauge (3)  
Drum eccentricity gauge (5)  
Cleaning fluid  
Cleaning piece

### Replacement procedure:

- (1) Remove the Cleaning Roller Block.
- (2) Disconnect connectors CN661 and CN662 on the SR-26 Board of the Brush Block.
- (3) Remove the Brush Cover and the brush of the Slip Ring Block.
- (4) Remove the fixing screws of the Slip Ring, then remove the Slip Ring.
- (5) Unsolder the twelve leads and two connectors on the printed circuit board of the Upper Drum. Remove the four fixing screws of the printed circuit board, then remove the printed circuit board from the Upper Drum Ass'y.
- (6) Remove the two fixing screws of the Upper Drum Ass'y, and then remove the Upper Drum Ass'y from the unit.
- (7) Clean the contacting surfaces of the flange and new Upper Drum Ass'y with a cloth moistened with cleaning fluid. (If there is a spacer between the drum and the flange, it should be remain in place, or be reinstalled in the same place with the new Upper Drum Ass'y. The spacer is 0.01 mm, 0.03 mm, or 0.1 mm.)

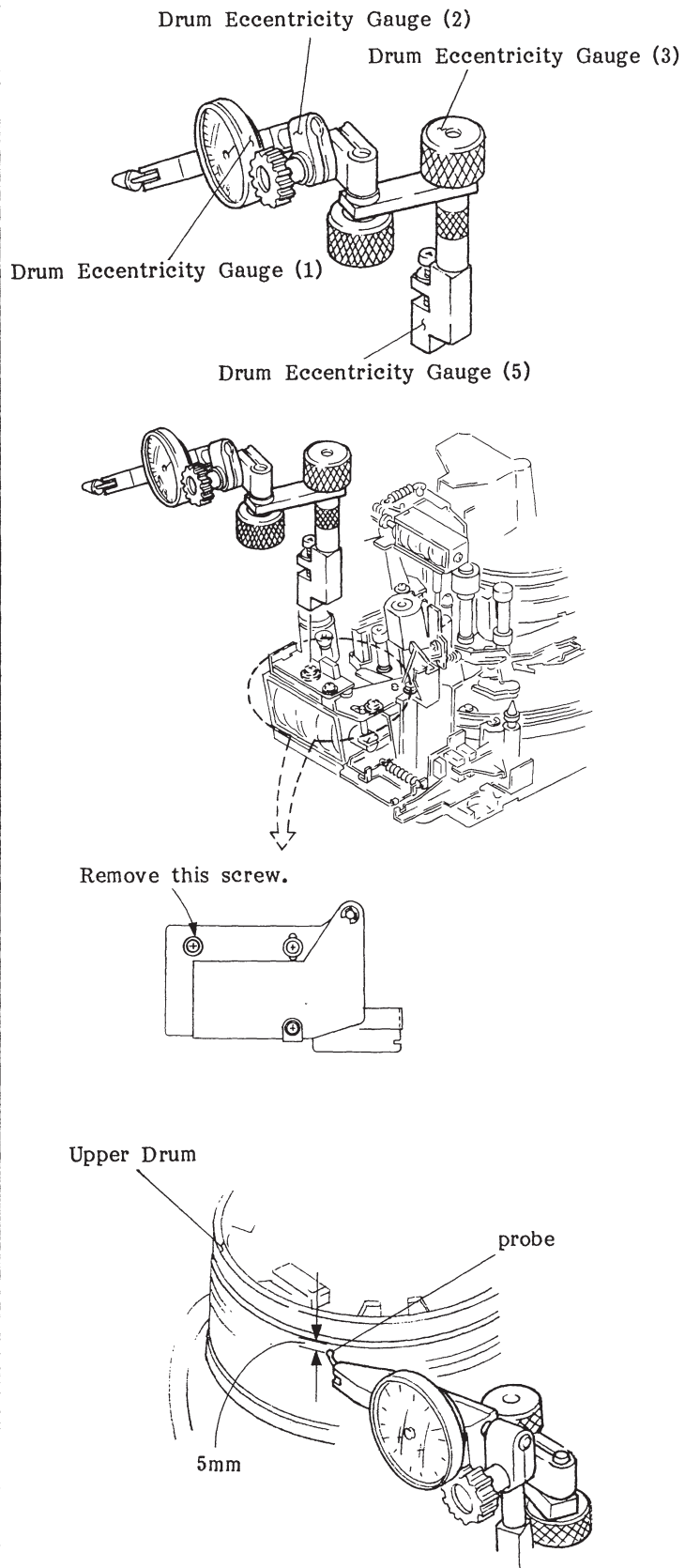
### <Removing the Connector>



- (8) Install the printed circuit board on the Upper Drum Ass'y with four fixing screws so that the marked "A" on the printed circuit board is placed to marked "A" on the Upper Drum Ass'y.
- (9) Place the marked "A" on the printed circuit board with the marked "A" of the Lower Drum Ass'y. Thread snugly with two fixing screws but do not tighten.

**Adjustment procedure:**

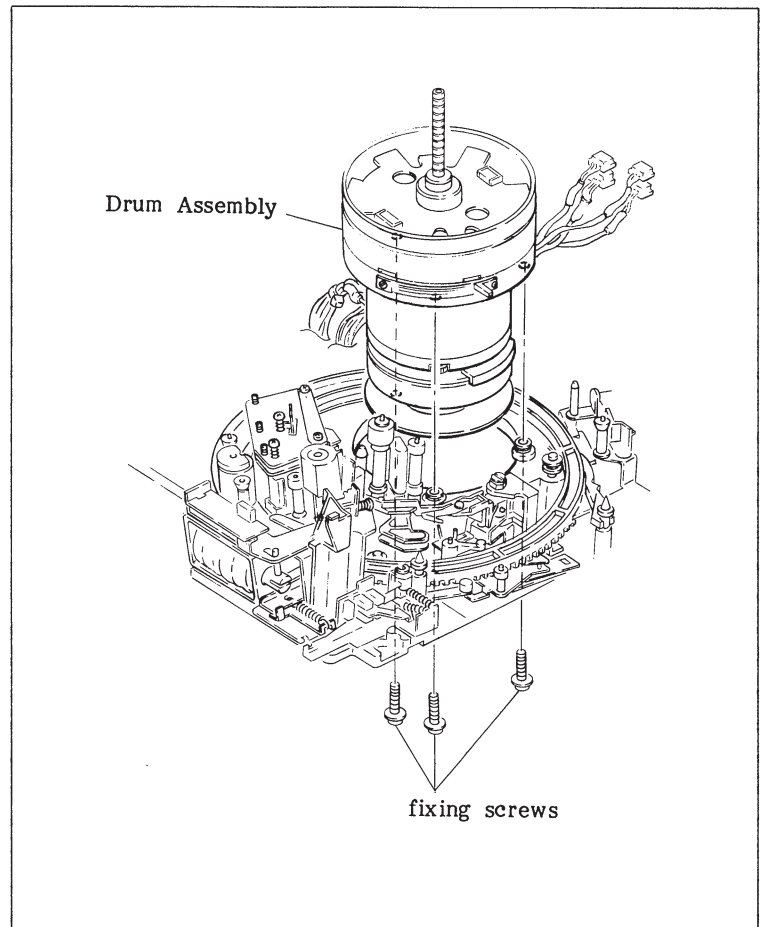
- (1) Assemble the drum eccentricity gauges (1), (2), (3), and (5) as shown in the figure. Remove the screws shown in the figure and mount the assembled gauges in the hole so that the tip probe is positioned about 5 mm from the overmost circumference top edge of the Upper Drum.
- (2) Turn the Upper Drum slowly clockwise direction and confirm that the pointer deflection of the gauge is within 5 microns during one complete turn of the Upper Drum. If this specification is satisfied, proceed to Step (5). If it is not, perform then continue with the remaining Steps.
- (3) Tap the top outer circumference of the Upper Drum with a nylon hammer or a screwdriver handle so that the gauge deflection remains within 5 microns.
- (4) After adjustments, tighten the two fixing screws that secure the Upper Drum alternately and gradually using a tightening torque of 8 kg. cm.
- (5) After the screws are tightened, check again that the eccentricity of the Upper Drum is within 5 microns.
- (6) Connect the two connectors, solder the twelve leads.
- (7) Install the brush, Brush Cover, and Cleaning Roller Block and connect the connectors.
- (8) Perform the adjustments in Section 5-23.



## 5-8. REPLACEMENT OF THE DRUM ASSEMBLY

### Replacement procedure:

- (1) Remove the Cleaning Roller Block.
- (2) Disconnect connectors CN661 and CN662 on the SR-26 Board of the Brush Block.
- (3) Remove the Brush Cover and the brush of the Slip Ring Block.
- (4) Disconnect connectors CN114, CN115, CN116, and CN117 on the MB-116 Board.
- (5) Disconnect connectors CN812 and CN823 on the RE-28 Board.
- (6) Disconnect connectors CN641, CN642, CN643, and CN644 on the RP-29 Board.
- (7) Remove the three fixing screws on the back of the unit, and then remove the defective drum.
- (8) Install the Drum Ass'y on the base. Tighten the fixing screws while turning the Drum Ass'y in a counterclockwise direction as viewed from top of the unit.
- (9) Connect the connectors of the drum harness.
- (10) Install the brush, Brush Cover, and Cleaning Roller Block and connect the two connectors on the SR-26 Board.
- (11) Perform the adjustments in Section 5-23.

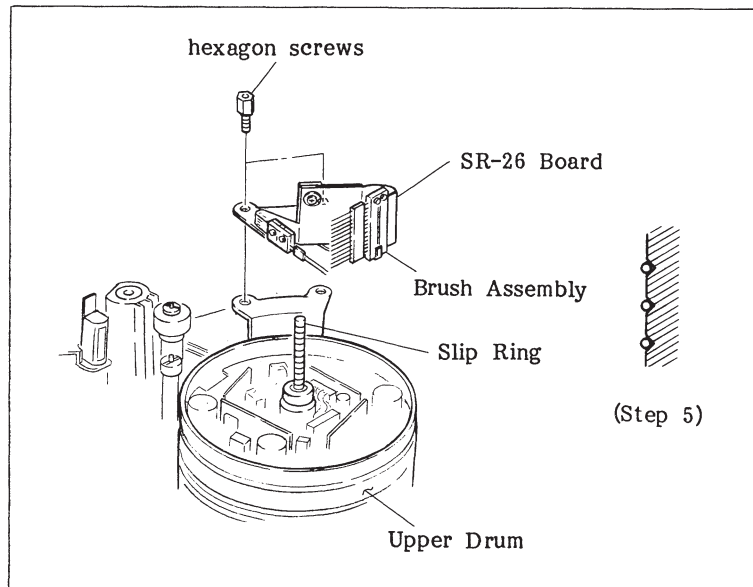




## 5-9. REPLACEMENT OF THE BRUSH ASSEMBLY

### Replacement procedure:

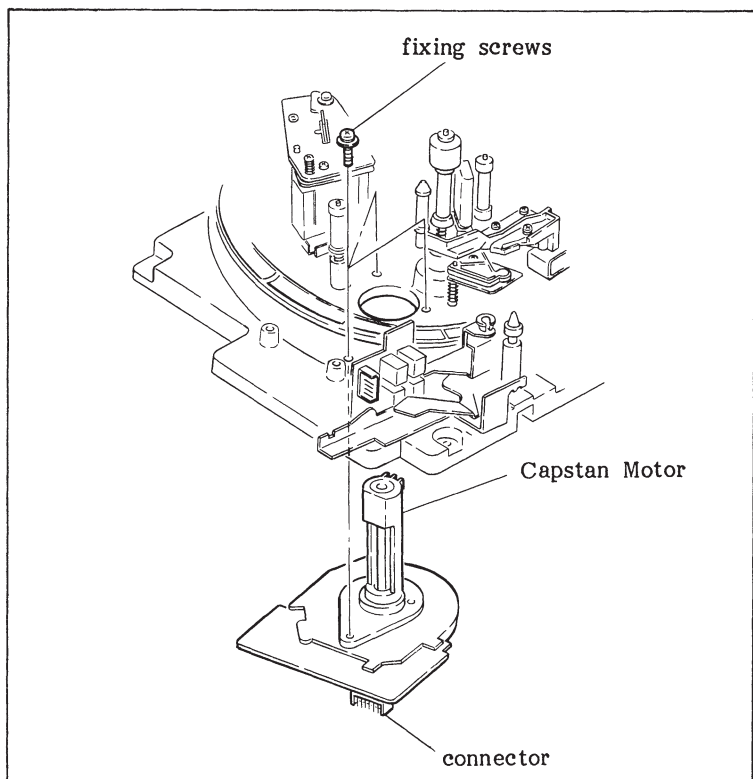
- (1) Remove the Cleaning Roller Block.
- (2) Remove the fixing screw, remove the Brush Cover.
- (3) Disconnect connectors CN661 and CN662 on the SR-26 Board.
- (4) Remove the two hexagon screws, replace the Brush Ass'y with a new one.
- (5) Check that the Brush touches the Slip Ring as shown in the figure.
- (6) Install the Brush Cover, two connectors on the SR-26 Board, and the Cleaning Roller Block.
- (7) Perform the adjustments in Section 5-23.



## 5-10. REPLACEMENT OF THE CAPSTAN MOTOR

### Replacement procedure:

- (1) Open the Function Control Panel, remove the SY-61 and SY-64 Boards.
- (2) Remove the two fixing screws of the Pinch Solenoid Block, and then remove the Pinch Solenoid Block from the unit.
- (3) Disconnect connector CN1 of the Capstan Motor on the back of the unit.
- (4) Remove the three fixing screws (a fixing screw is under the Pinch Solenoid Block); remove the Capstan Motor from the unit.
- (5) Install the new Capstan Motor. Tighten the three fixing screws while turning the motor in the clockwise direction, as viewed from top of the unit.
- (6) Install the Pinch Solenoid Block in the unit.
- (7) Perform the adjustments in Section 5-23.



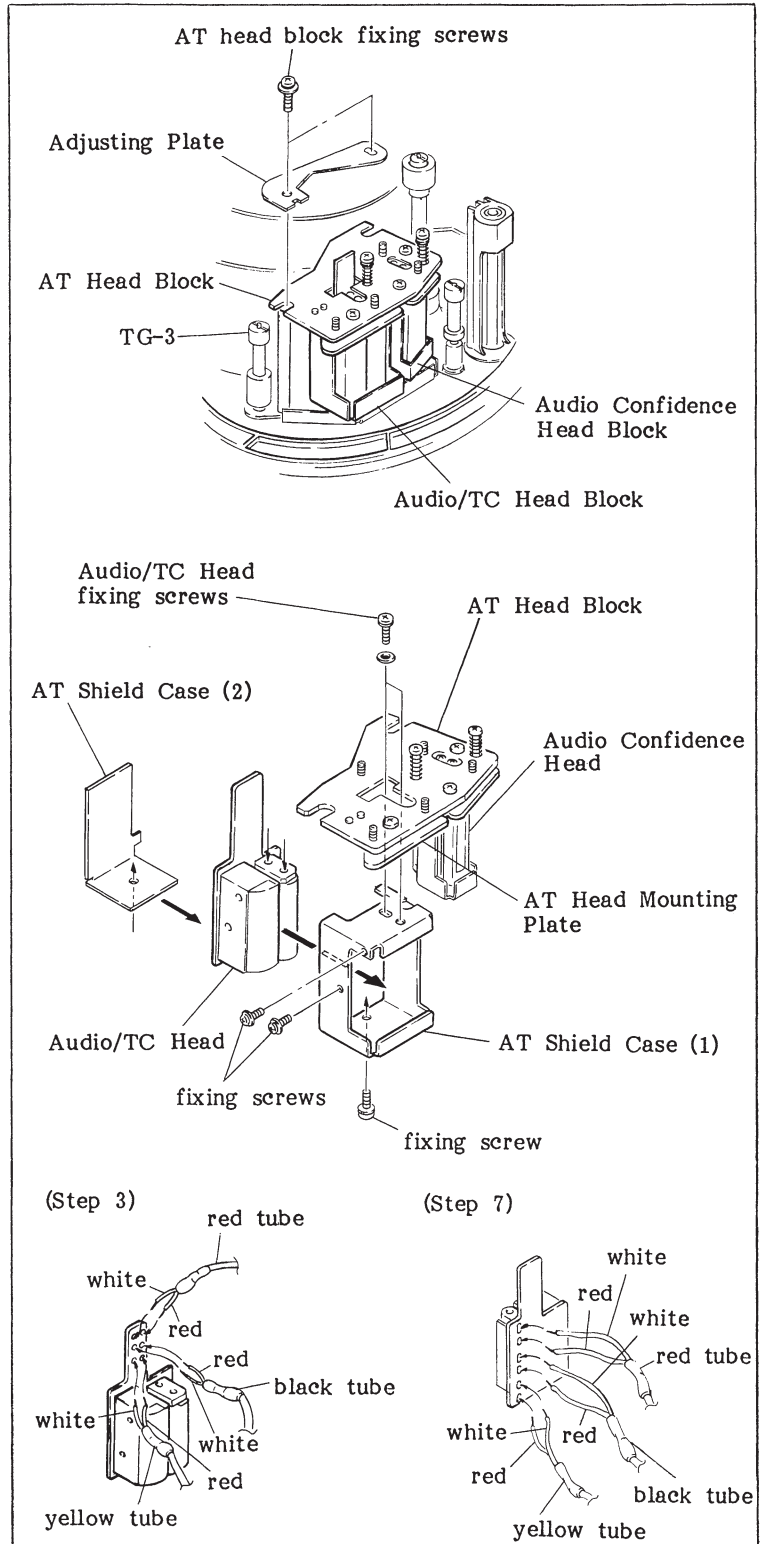


## 5-11. REPLACEMENT OF THE AUDIO/TC HEAD

- . The Audio/TC Head and the Audio Confidence Head are combined in one unit: Called the AT Head Block.

### Replacement procedure:

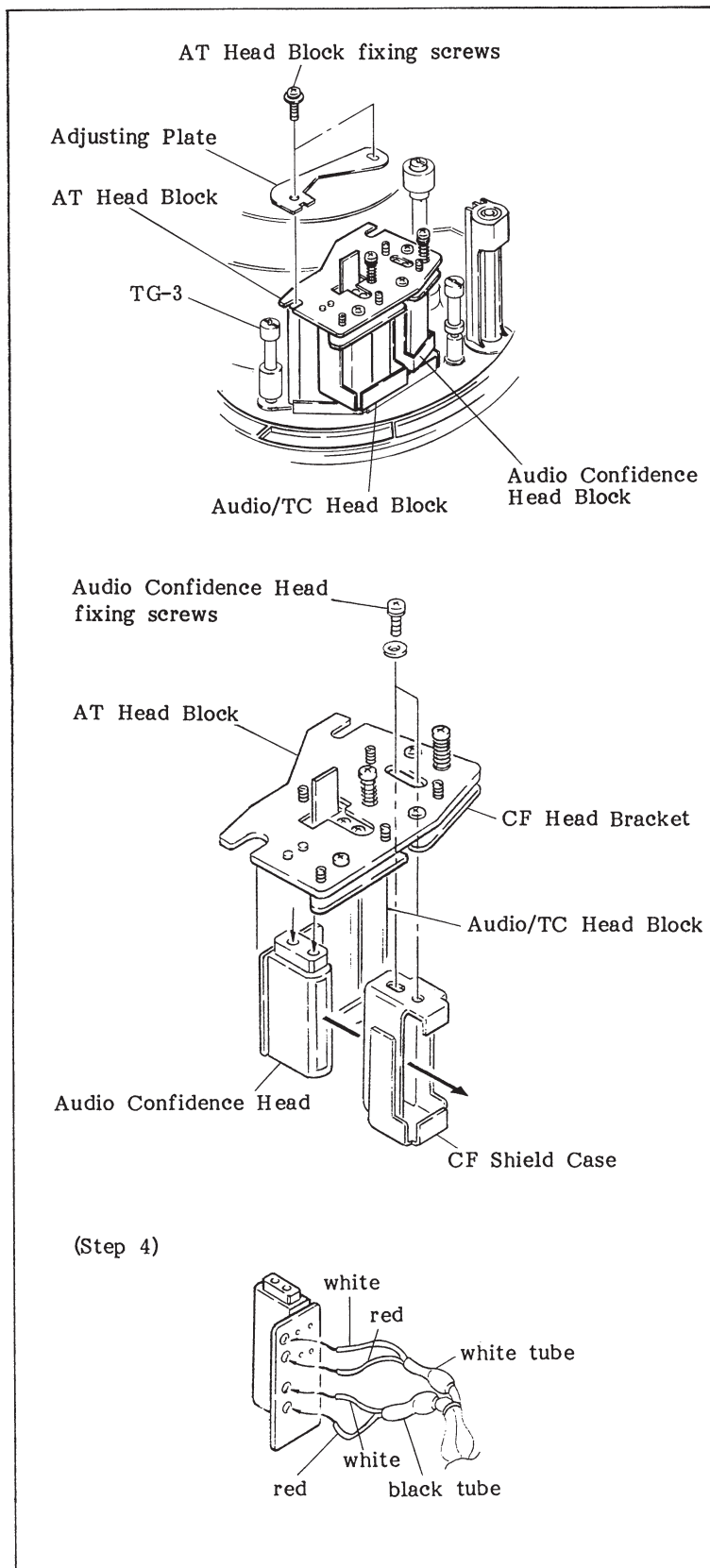
- (1) Remove the Cleaning Roller Block.
  - (2) Remove the two fixing screws of the AT Head Block, then remove the AT Head Block from the unit.
  - (3) Unsolder the six leads on the board (upper portion) of the Audio/TC Head.
  - (4) Remove the two fixing screws as shown in the figure, then remove the Audio/TC Head Block from the AT Head Block.
  - (5) Remove the fixing screw of the AT Shield Case (2) in the lower portion. Remove the AT Shield Case (2) from the Audio/TC Head Block.
  - (6) Remove the two fixing screws of the AT Shield Case (1), then remove the Audio/TC Head.
  - (7) Unsolder the six leads on the board (lower portion) of the Audio/TC Head.
  - (8) Replace the Audio/TC Head with a new one.
  - (9) Install the Audio/TC head in the reverse order of Steps (1) to (7).
  - (10) After replacement, perform the adjustments in Section 5-23.
- . Perform the preparation as follows:
    - (i) AU-76 Board  
Turn DIP switches S101-Bit 1, S102-Bit 1, S201-Bit 1, S202-Bit 1 to ON. Turn Bits 2, 3 and 4 of these switches to OFF.
    - (ii) AU-76 Board  
Turn RV101, RV110, RV201 and RV210 clockwise as far as they will go.



## 5-12. REPLACEMENT OF THE AUDIO CONFIDENCE HEAD

### Replacement procedure:

- (1) Remove the Cleaning Roller Block.
- (2) Remove the two fixing screws of the AT Head Block, then remove the AT Head Block from the unit.
- (3) Remove the two fixing screws as shown in the figure, then remove the Audio Confidence Head Block from the AT Head Block. (At this time, the CF Shield Case is removed, too.)
- (4) Unsolder the four leads on the board of the Audio Confidence Head.
- (5) Replace the Audio Confidence Head with a new one.
- (6) Solder the four leads on the board.
- (7) Insert the Audio Confidence Head into the Shield Case, then install it on the CF Head Bracket with the two fixing screws and the two washers while pushing in the direction of the arrow.
- (8) Install the Audio Confidence Head in the reverse order of Steps (1) and (2).
- (9) After replacement, perform the adjustments in Section 5-23.
  - . Perform the preparation as follows:
    - (i) AU-76 Board  
Turn DIP switches S101-Bit 1, S102-Bit 1, S201-Bit 1, S202-Bit 1 to ON. Turn Bits 2, 3 and 4 of these switches to OFF.
    - (ii) AU-76 Board  
Turn RV101, RV110, RV201 and RV210 clockwise as far as they will go.

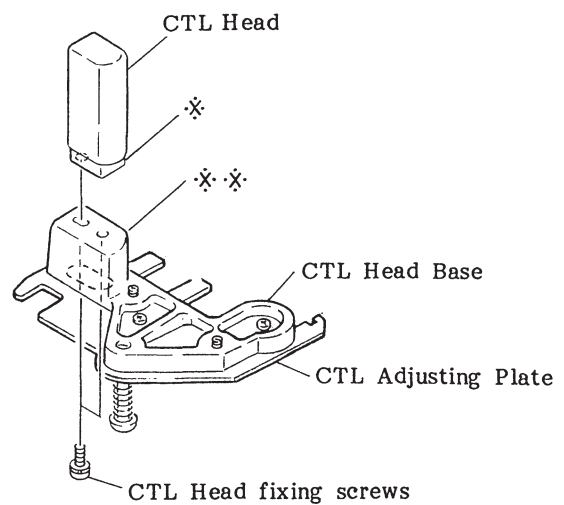
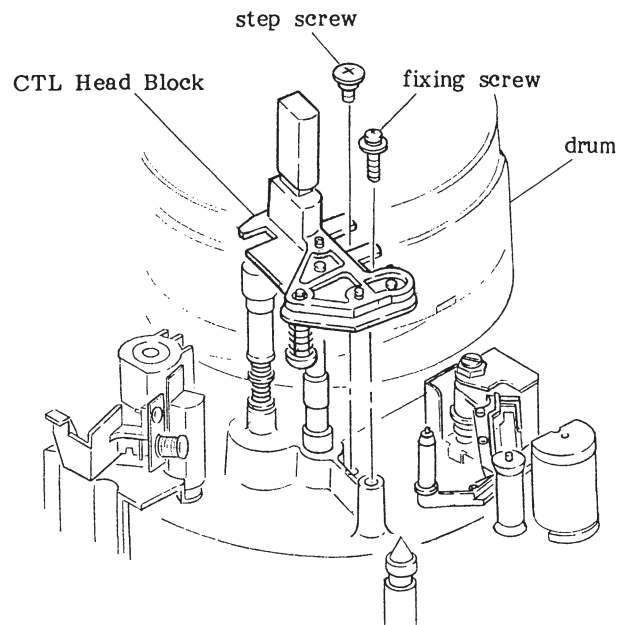


### 5-13. REPLACEMENT OF THE CTL HEAD

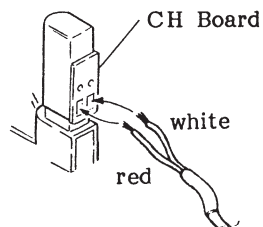
**Mode:** Unthreading end mode

**Replacement procedure:**

- (1) Remove the fixing screw and step screw as shown in the figure, remove the CTL Head Block from the unit.
- (2) Unsolder the two leads on the CH Board of the CTL Head.
- (3) Remove the two fixing screws from the CTL Head.
- (4) Replace the CTL Head with a new one. (Install the new CTL Head so that the \* marked portion of the CTL Head is parallel with the \*-\* marked portion of the CTL Head Base.)
- (5) Install the CTL Head in the reverse order of Steps (1) to (3).
- (6) After replacement, perform the adjustments in Section 5-23.



(Step 2)

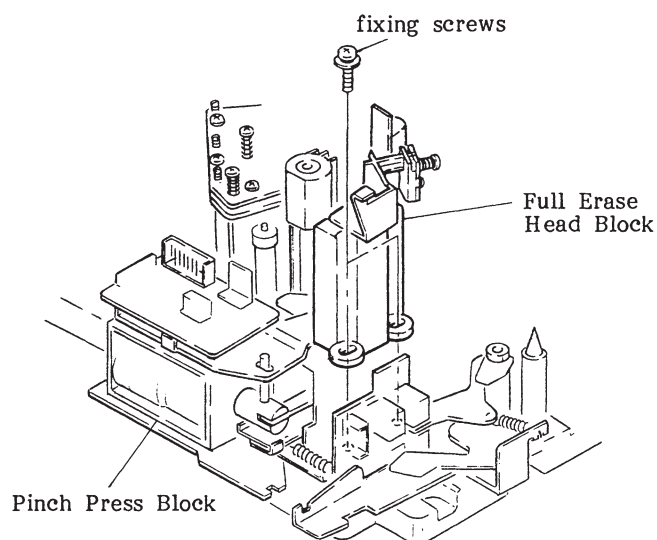


lead	CH board
red	CX
white	CY

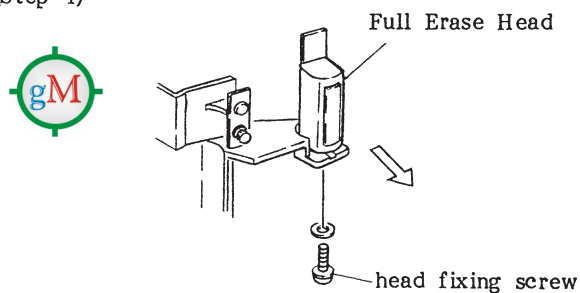
## 5-14. REPLACEMENT OF THE FULL ERASE HEAD

### Replacement procedure:

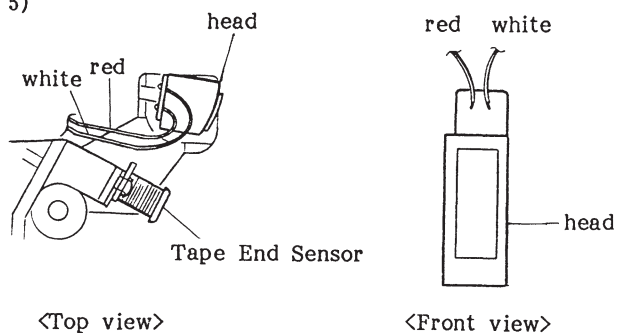
- (1) Remove the two fixing screws as shown in the figure, then remove the Full Erase Head Block from the unit.
- (2) Unsolder the two leads on the FE Board of the Full Erase Head.
- (3) Remove the fixing screw of the Full Erase Head in the lower portion.
- (4) Install the new Full Erase Head while pushing the FE Base in the direction of the arrow.
- (5) Install the FE Head Block. Solder the two leads as shown in the figure.



(Step 4)



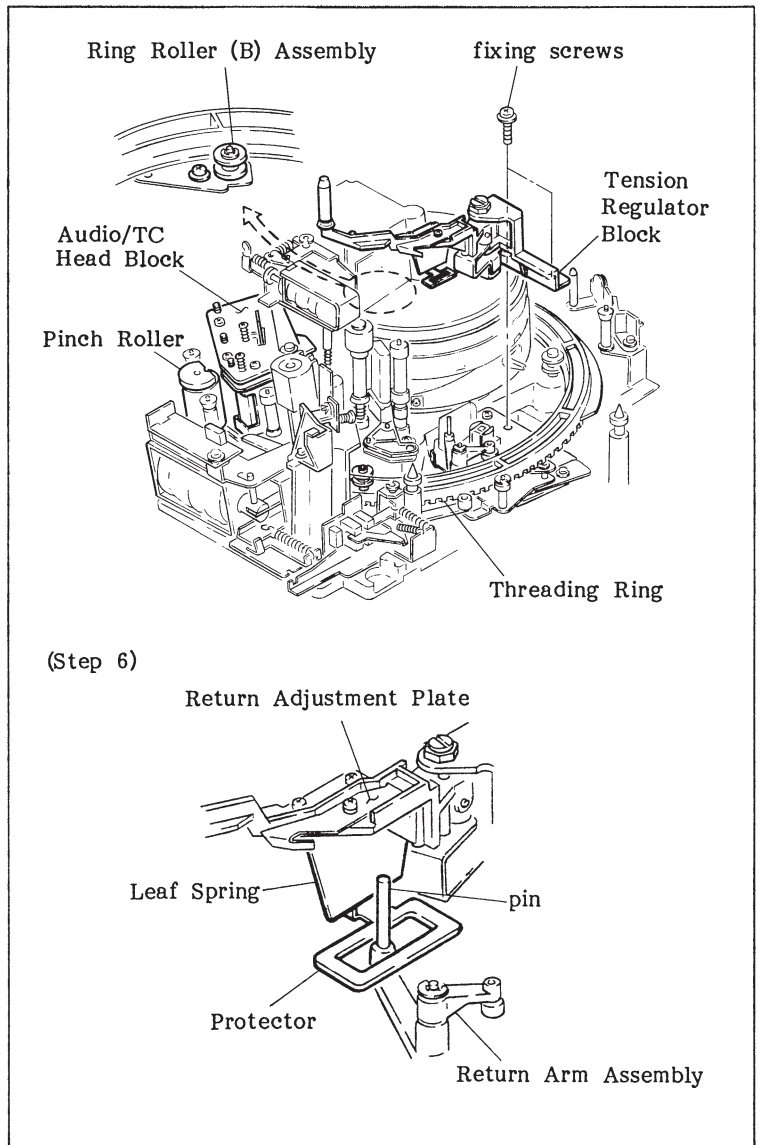
(Step 5)



## 5-15. REPLACEMENT OF THE TENSION REGULATOR BLOCK

### Replacement procedure:

- (1) Loosen the two fixing screws of the Gear Box, release the engagement of the Drive Gear and the Threading Ring.
- (2) Turn the Threading Ring so that the Pinch Roller is placed in front of the Audio/TC Head Block.
- (3) Loosen the fixing screw of the Ring Roller (B), release the hold of the Threading Ring.
- (4) Lightly lift the Threading Ring in front of the Supply Reel Table. Remove the two fixing screws of the Tension Regulator Block as shown in the figure.
- (5) Remove the Return Adjustment Plate, protector, and Leaf Spring from the old Tension Regulator Block. Install them in the new one.
- (6) Install the Tension Regulator Block so that the pin of the Return Arm Ass'y is placed into the hole of the protector as shown in the figure.
- (7) Tighten the Ring Roller (B) to the unit. After replacement, perform the adjustments in Section 5-23.



## 5-16. REPLACEMENT OF THE SUPPLY TENSION ROLLER

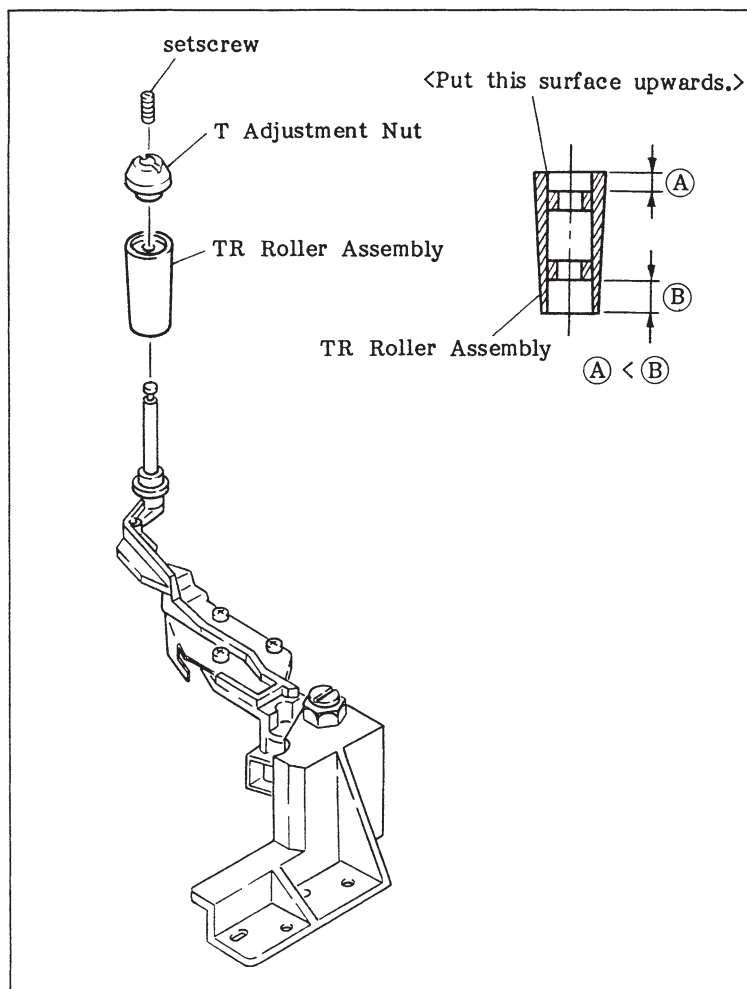
**Tool:** Hex. key (across flat has 0.9 mm)

### Replacement procedure:

- (1) Remove the setscrew as shown in the figure.
- (2) Turn the T Adjustment Nut, then remove it.
- (3) Remove the TR Roller Ass'y, replace it with a new one.

NOTE: Before assembling the TR Roller Ass'y, put the TR Roller Ass'y in the direction as shown in the figure.

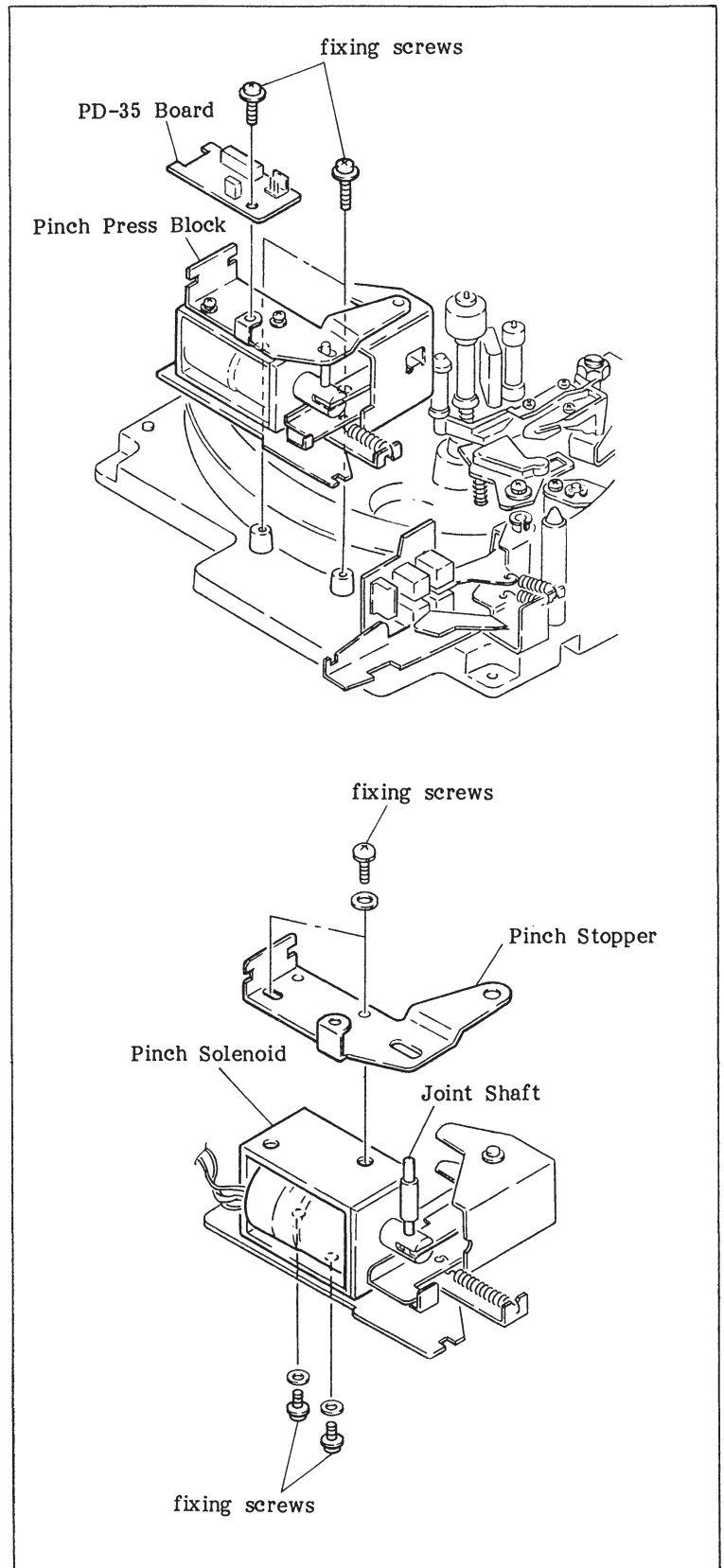
- (4) After replacement, perform the adjustments in Section 5-23.



## 5-17. REPLACEMENT OF THE PINCH SOLENOID

### Replacement procedure:

- (1) Remove the PD-35 Board from the Pinch Press Block.
- (2) Remove the Pinch Press Block from the unit.
- (3) Remove the two fixing screws as shown in the figure, remove the Pinch Stopper.
- (4) Remove the Joint Shaft.
- (5) Remove the two fixing screws. Remove the Pinch Solenoid, replace it with a new one.
- (6) After replacement, perform the adjustments in Section 5-23.



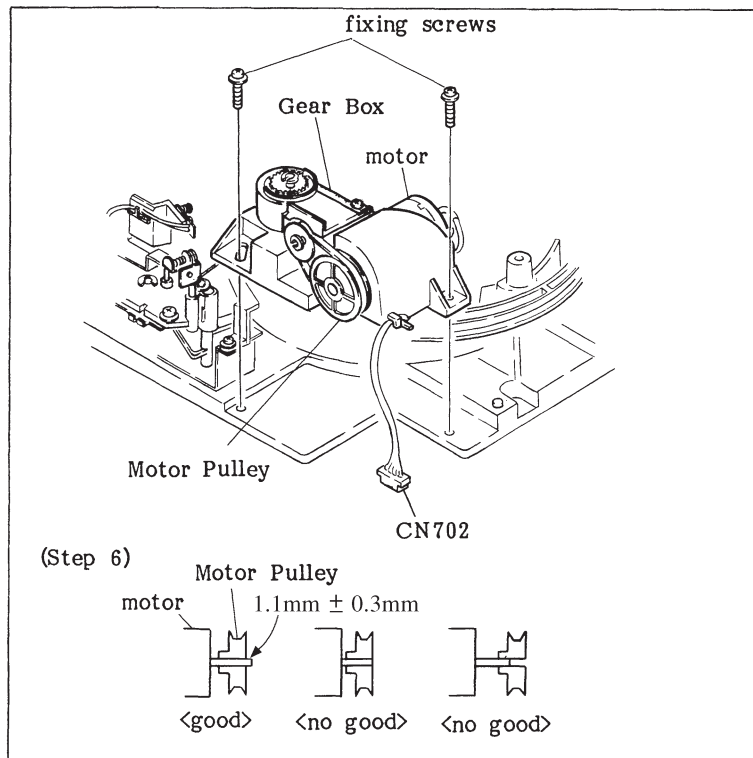


## 5-18. REPLACEMENT OF THE THREADING MOTOR

**Tool:** Hex. key (across flat has 1.27 mm)

### Replacement procedure:

- (1) Disconnect connector CN702 on the SE-57 Board.
- (2) Remove the two fixing screws, then remove the Gear Box from the unit.
- (3) Remove the fixing screw of the Motor Pulley with a hex. key. Remove the pulley and the belt from the Gear Box.
- (4) Unsolder the two leads of the motor.
- (5) Replace the motor with a new one. Solder the gray lead to the "+" terminal and the black lead to the other terminal.
- (6) Install the Motor Pulley so that the end of the Motor Shaft and the Motor Pulley are as shown in the figure.
- (7) Install the Gear Box into the unit. Connect connector CN702 on the SE-57 Board.
- (8) Perform the adjustments in Section 5-23.

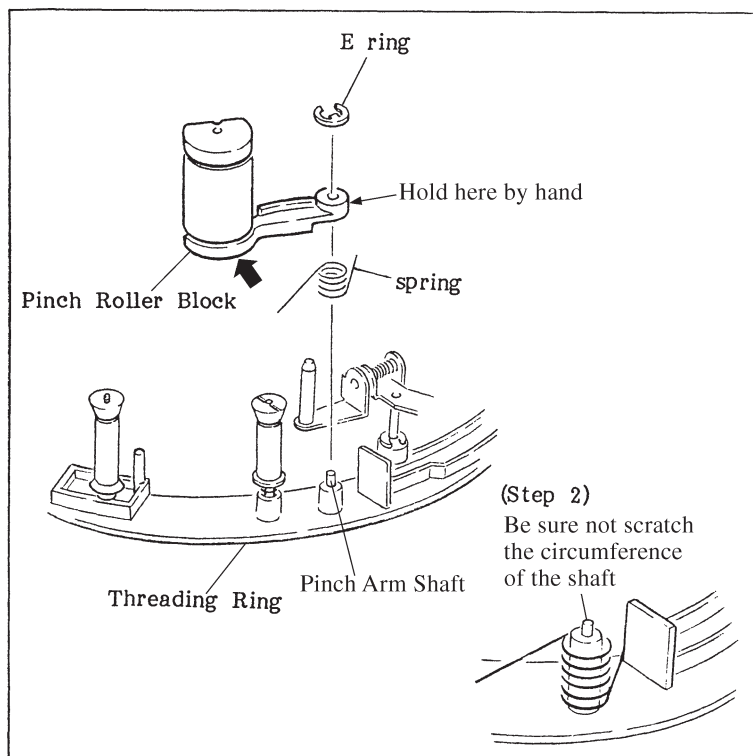


## 5-19. REPLACEMENT OF THE PINCH ROLLER

**Mode:** Unthread end mode (Turn the power OFF.)  
Turn the Motor Pulley of the Gear Box about 5 turns so that the Threading Ring turns a little in the threading direction.

### Replacement procedure:

- (1) Remove the E ring on the Threading Ring as shown in the figure.
- (2) As shown in the figure, hold the specified section of the Pinch Roller Block, and remove it gradually upward.  
Note 1: Be sure not to remove the Pinch Roller Block by holding the Pinch Roller Rubber or the Pinch Arm Block.  
Note 2: Be sure not to scratch the Pinch Arm Shaft.
- (3) Moisten the cleaning piece with cleaning fluid, and clean the Pinch Arm Shaft.
- (4) Moisten a clean gauze with Sony Oil, and wipe the outer circumference of the Pinch Arm Shaft lightly.
- (5) Hook the spring as shown in the figure, install the new Pinch Roller on the Threading Ring.  
Note: Be sure not to scratch the Pinch Arm Shaft.
- (6) After installing the E-ring, check that the Pinch Arm Assembly returns its specified position by means of the force of spring while pushing the Pinch Arm Assembly in the arrow direction several times with fingertip.
- (7) After replacement, perform the adjustments in Section 5-23.

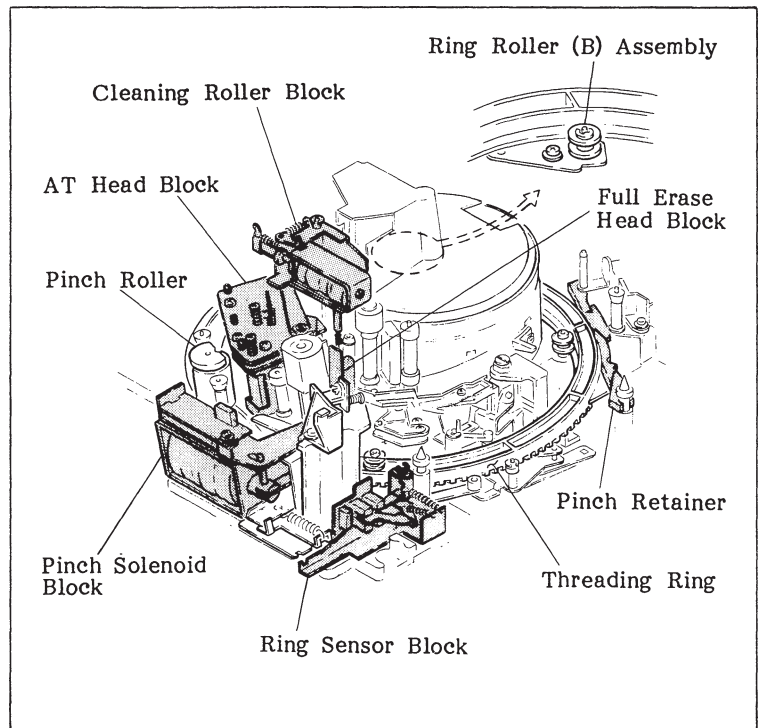




## 5-20. REPLACEMENT OF THE THREADING RING

### Replacement procedure:

- (1) Turn the Gear Box Pulley by hand so that the Pinch Roller is in front of the Audio/TC Head.
- (2) Remove the Pinch Retainer, Full Erase Head Block, Cleaning Roller Block, AT Head Block, Pinch Solenoid Block, and the Ring Sensor Block.
- (3) Disconnect the two connectors on the Slip Ring Block.
- (4) Loosen the fixing screws of the Gear Box, release the engagement of the Drive Gear and the Threading Ring.
- (5) Loosen the fixing screw of the Ring Roller (B), release the hold of the Threading Ring.
- (6) Remove the Threading Ring, replace it with a new one.
- (7) Install the Ring Sensor while turning in the counterclockwise direction.
- (8) Install the Pinch Solenoid Block, AT Head Block, and Full Erase Head Block.
- (9) Insert the two connectors on the Slip Ring Block.
- (10) After replacement, perform the adjustments in Section 5-23.



## 5-21. REPLACEMENT OF THE CASSETTE-UP COMPARTMENT WORM GEAR

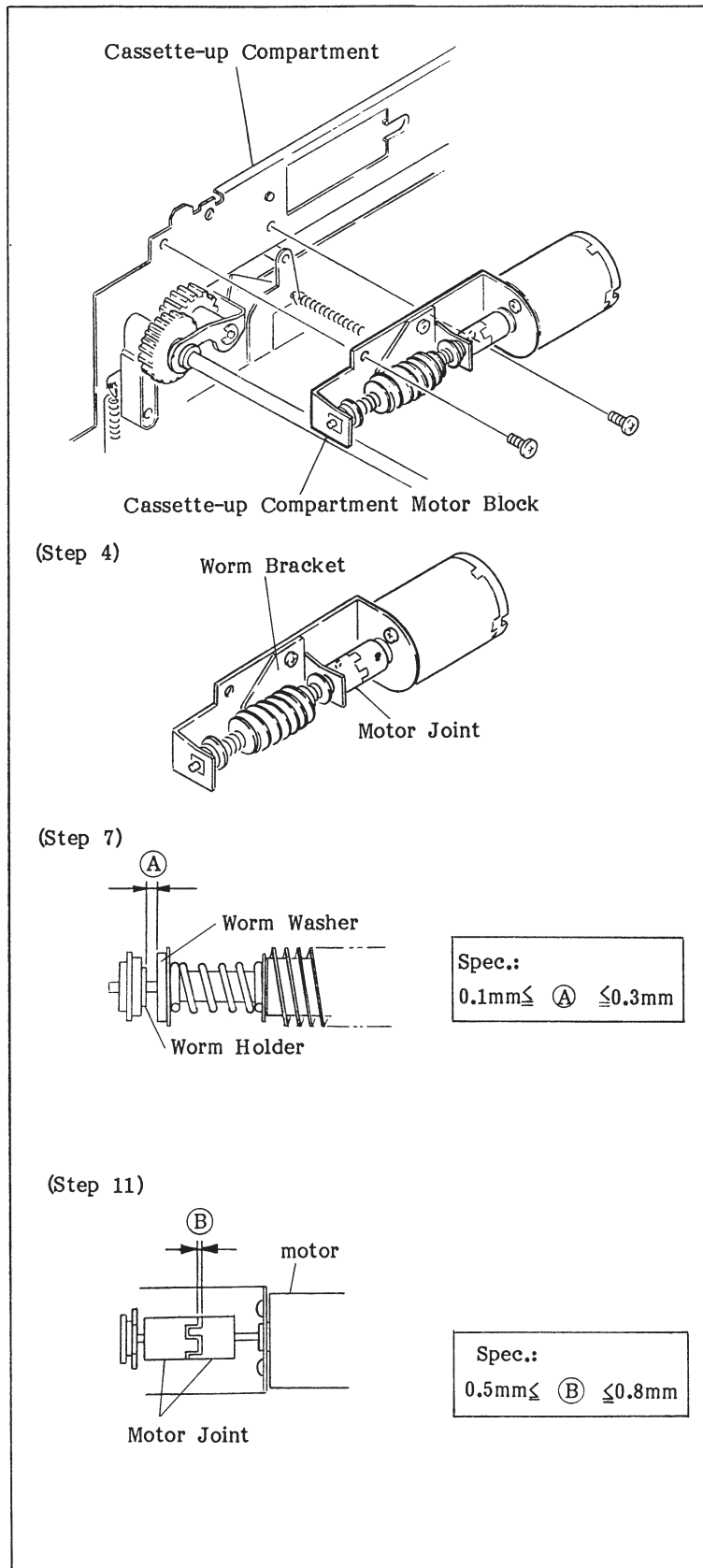
**Tool:** Hex. key (across flat has 1.27 mm)

DC power (12 V)

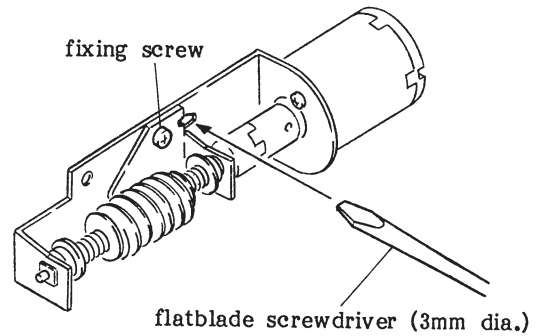
Wire clearance gauge

### Replacement procedure:

- (1) Remove the Cassette-up Compartment from the unit.
- (2) Disconnect the connector on the CCM-2 Board of the Cassette-up Compartment Motor.
- (3) Remove the Cassette-up Compartment Motor Block from the Cassette-up Compartment.
- (4) Loosen the fixing screw of the Motor Joint on the Worm Gear Shaft side.
- (5) Remove the motor.
- (6) Remove the Worm Bracket, replace the defective parts with a new one.
- (7) Install the Worm Bracket in the Cassette-up Compartment Motor Block so that the clearance between the Worm Holder and the Worm Washer meets the required specification.
- (8) Insert the Motor Joint into the Worm Gear Shaft, then install it while pushing the Motor Joint in the direction of the Bracket.
- (9) Insert the motor into the Bracket, engaged at two joints.
- (10) Secure the motor to the Bracket.
- (11) Remove the Motor Joint in the motor side so that the clearance between the two joints meets the required specification.
- (12) Supply the 12VDC power to the connector on the CCM-2 Board of the Cassette-up Compartment Motor.
- (13) Loosen the Worm Mounting Screw about 1/4 turn. Adjust the position of the Worm Bracket with a flatblade screwdriver (3 mm dia.) so that the current reading is minimized.
- (14) Install the Cassette-up Compartment Motor Block to the Cassette-up Compartment Ass'y, connect the connector to the Cassette-up Compartment Motor.



(Step 13)

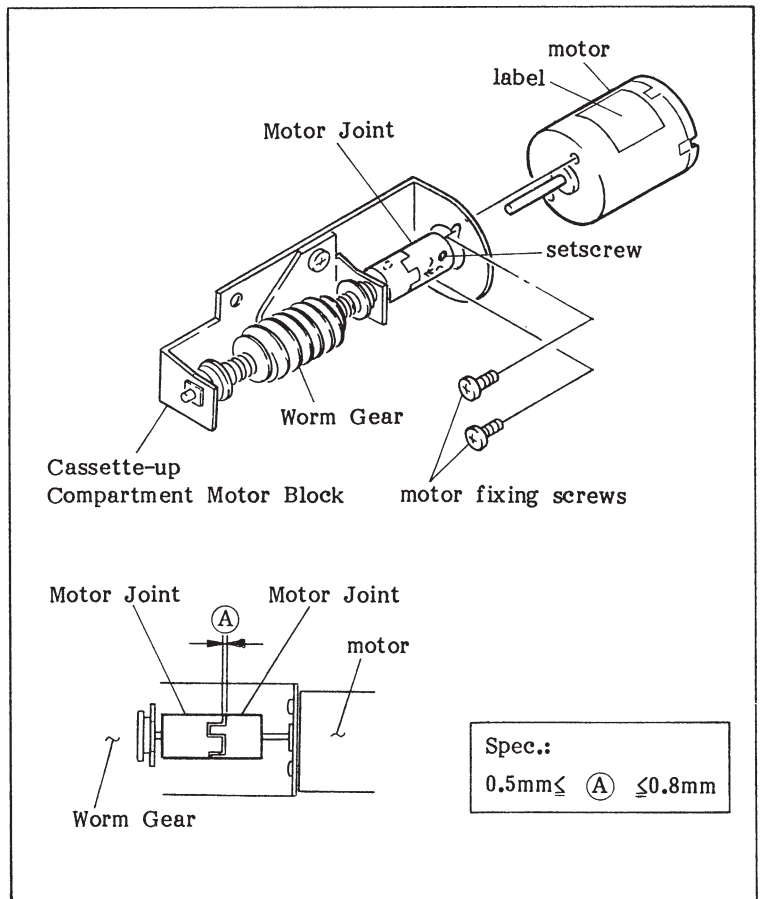


## 5-22. REPLACEMENT OF THE CASSETTE-UP COMPARTMENT MOTOR

**Tool:** Hex. key (across flat has 1.27 mm)  
DC power (12 V)  
Wire clearance gauge

### Replacement procedure:

- (1) Disconnect the connector on the CCM-2 Board of the Cassette-up Compartment Motor.
- (2) Remove the Cassette-up Compartment Motor Block from the Cassette-up Compartment.
- (3) Loosen the fixing screws of the motor, and then remove the motor.
- (4) Thread the Motor Joint snugly but do not tighten to the shaft of the new motor, then insert the Motor Joint into the bracket. (Install it so that the label on the Motor is located as shown in the figure.)
- (5) Adjust the position of the Motor Joint on the motor side so that the clearance between the Motor Joints on the Worm Gear side and the motor side meets the required specification.
- (6) Install the Cassette-up Compartment Motor Block to the Cassette-up Compartment.



## 5-23. ITEMS TO BE ADJUSTED AFTER MAIN PARTS REPLACEMENT

. Numbers in parenthesis refer to Section Nos.

### Replacement of the Reel Motor

Reel Motor Shaft Slantness Adjustment (6-1-3) —→ Reel Table Height Adjustment (6-1-4) —→ Reel Rotation Detector Block Position Adjustment (6-1-5) —→ Reel Table Brake Clearance Adjustment (6-2-1) —→ Supply Brake Torque Adjustment (7-1-1) or Take-up Brake Torque Adjustment (7-1-2) —→ Reel Torque Adjustment (7-2) —→ Video Tracking Adjustment (Check) (8-1)

### Replacement of the Reel Table

Reel Table Height Adjustment (6-1-4) —→ Reel Rotation Detector Block Position Adjustment (6-1-5) —→ Reel Table Brake Clearance Adjustment (6-2-1) —→ Supply Brake Torque Adjustment (7-1-1) or Take-up Brake Torque Adjustment (7-1-2) —→ Video Tracking Adjustment (Check) (8-1)

### Replacement of the Motor Plate Assembly

Cassette Holder Height Adjustment (L) (6-1-1) —→ Cassette Holder Height Adjustment (S) (6-1-2) —→ Reel Table Height Adjustment (6-1-4) —→ Reel Rotation Detector Block Position Adjustment (6-1-5) —→ Reel Table Brake Clearance Adjustment (6-2-1) —→ Reel Table Brake Release Adjustment (6-2-2) —→ Supply Brake Torque Adjustment (7-1-1) —→ Take-up Brake Torque Adjustment (7-1-2) —→ Reel Torque Adjustment (7-2) —→ Video Tracking Adjustment (Check) (8-1)

### Replacement of the Reel Table Brake

Reel Table Brake Clearance Adjustment (6-2-1) —→ Reel Table Brake Release Adjustment (6-2-2) —→ Supply Brake Torque Adjustment (7-1-1) or Take-up Brake Torque Adjustment (7-1-2)

### Replacement of the Upper Drum

Slip Ring Block Brush Position Adjustment (8-6) —→ Video Tracking Adjustment (8-1) —→ CTL Head Position Adjustment (8-4-3) —→ Audio/TC Head Position Adjustment (8-2-5) —→ Cleaning Roller Position Adjustment (6-9) —→ R/P Head Y Switching Position Adjustment (10-16) —→ R/P Head C Switching Position Adjustment (10-17) —→ REC Drum Lock Phase Adjustment (10-18) —→ Picture Slitting Compensation Adjustment (10-19) —→ DT Head Y Switching Pulse Position Adjustment (10-20-8) —→ Video System Adjustment

### **Replacement of the Drum Assembly**

Slip Ring Block Brush Position Adjustment (8-6) → Video Tracking Adjustment (8-1) (Adjust as described in "Tracking Adjustment".) → CTL Head Position Adjustment (8-4-3) → Audio/TC Head Position Adjustment (8-2-5) → Cleaning Roller Position Adjustment (6-9) → R/P Head Y Switching Position Adjustment (10-16) → R/P Head C Switching Position Adjustment (10-17) → REC Drum Lock Phase Adjustment (10-18) → Picture Slitting Compensation Adjustment (10-19) → DT Head Y Switching Pulse Position Adjustment (10-20-8) → Video System Adjustment

### **Replacement of the Brush Assembly**

Slip Ring Block Brush Position Adjustment (8-6)

### **Replacement of the Capstan Motor**

Pinch Roller Press Block Position Adjustment (6-6) → Video Tracking Adjustment (8-1)

### **Replacement of the Audio/TC Head Block**

Audio/TC Head Zenith Adjustment (8-2-2) → Audio/TC Head Height Adjustment (8-2-1) → Audio/TC Head Azimuth Adjustment (8-2-3) → Audio/TC Head Phase Adjustment (8-2-4) → Video Tracking Adjustment (Check) (8-1) → Audio/TC Head Position Adjustment (8-2-5) → Audio Confidence Head Zenith Adjustment (8-3-2) → Audio Confidence Head Height Adjustment (8-3-1) → Audio Confidence Head Azimuth Adjustment (8-3-3) → Audio Confidence Head Phase Adjustment (8-3-4) → Audio System Adjustment → Time Code System Adjustment → Cleaning Roller Position Adjustment (6-9)

### **Replacement of the Audio Confidence Head**

Audio Confidence Head Zenith Adjustment (8-3-2) → Audio Confidence Head Height Adjustment (8-3-1) → Audio Confidence Head Azimuth Adjustment (8-3-3) → Audio Confidence Head Phase Adjustment (8-3-4) → Audio/TC Head Zenith Adjustment (8-2-2) → Audio/TC Head Height Adjustment (8-2-1) → Audio/TC Head Azimuth Adjustment (8-2-3) → Audio/TC Head Phase Adjustment (8-2-4) → Video Tracking Adjustment (8-1) → Audio/TC Head Position Adjustment (8-2-5) → Audio System Adjustment → Cleaning Roller Position Adjustment (6-9)

### **Replacement of the CTL Head**

CTL Head Azimuth/Zenith Adjustment (8-4-2) → CTL Head Height Adjustment (8-4-1) → Video Tracking Adjustment (8-1) → CTL Head Position Adjustment (8-4-3) → Audio/TC Head Position Adjustment (8-2-5)

### **Replacement of the Tension Regulator Block**

Threading Ring Rotation Adjustment (6-4) → Gear Box position Adjustment (6-5) → Pinch Roller Press Block Position Adjustment (6-6) → Tension Regulator Arm Position Adjustment (6-3-1) → Tension Regulator Arm Slantness Adjustment (6-3-2) → Tension Sensor Position → Adjustment (6-7) → Tension Sensor Sensitivity Adjustment (6-8) → Video Tracking Adjustment (8-1) → Cleaning Roller Position Adjustment (6-9)

### **Replacement of the S Tension Roller**

Video Tracking Adjustment (8-1)

### **Replacement of the Pinch Solenoid**

Pinch Roller Press Block Position Adjustment (6-6)

### **Replacement of the Capstan Motor**

Pinch Roller Press Block Position Adjustment (6-6) → Servo System Adjustment → Video Tracking Adjustment (8-1)

### **Replacement of the Threading Motor**

Gear Box Position Adjustment (6-5)

### **Replacement of the Pinch Roller**

Pinch Roller Press Block Position Adjustment (6-6) → Video Tracking Adjustment (8-1)



### **Replacement of the Threading Ring**

Threading Rotation Adjustment (6-4) → Gear Box Position Adjustment (6-5) → Pinch Roller Press Block Position Adjustment (6-6) → Audio/TC Head Zenith Adjustment (8-2-2) → Audio/TC Head Height Adjustment (8-2-1) → Audio/TC Head Azimuth Adjustment (8-2-3) → Audio/TC Head Phase Adjustment (8-2-4) → Position Adjustment (8-2-5) → Audio confidence Head Zenith Adjustment (8-3-2) → Audio Confidence Head Height Adjustment (8-3-1) → Audio Confidence Head Azimuth Adjustment (8-3-3) → Audio Confidence Head Phase Adjustment (8-3-4) → Video Tracking Adjustment (8-1) → Cleaning Roller Position Adjustment (6-9)

## SECTION 6

### LINK AND DRIVE SYSTEM ALIGNMENT

#### ALIGNMENT INFORMATION

#### MODES

##### Unthreading end mode

This indicates the EJECT completion mode. At the time of ejection, the tension regulator arm and threading ring are completely returned to the cassette tape side.

##### Threading mode

When the STOP button is pressed, the threading ring rotates counterclockwise.

##### Threading end mode (STOP mode)

When the STOP button is pressed, the threading ring rotates counterclockwise, and the threading ring rotation is then stopped.

##### PLAY mode without a cassette tape

- (1) Remove the Cassette-up Compartment (refer to Section 4-2).
- (2) Set DIP switch S106 on the SY-61 Board to ON.
- (3) Set System Setup \*Item 902 to 1.  
(At that time, message "Error" appears on the time counter display of the front panel. The unit is activated normally irrespective of its message.)
- (4) When the STOP button is pressed, the threading ring rotates counterclockwise, and the threading ring rotation is stopped. The STANDBY lamp then lights, and the unit enters the STOP mode.
- (5) When the PLAY button is pressed, the pinch roller is pressed against the capstan shaft, and the unit enters the PLAY mode.
- (6) After adjustment is completed, set System Setup \*Item 902 to 0.
- (7) Set DIP switch S106 on the SY-61 Board to OFF.
- (8) Install the Cassette-up Compartment.

##### STANDBY OFF mode without a cassette tape

- (1) Put the unit into the STOP mode without a cassette tape (refer to Steps 1 through 4 described above).
- (2) Press the STANDBY button after the STANDBY lamp lights.  
The STANDBY lamp then goes off, and the unit enters the STANDBY OFF mode in which the drum rotation is stopped.
- (3) After adjustment is completed, set System Setup \*Item 902 to 0.
- (4) Set DIP switch S106 on the SY-61 Board to OFF.
- (5) Install the Cassette-up Compartment.

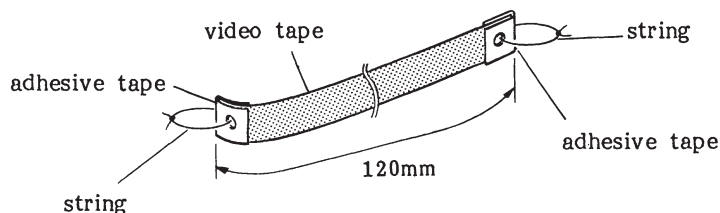
##### REV mode without tape

- (1) Put the unit into the STOP mode without a cassette tape.
- (2) Turn the search dial counterclockwise. The unit then enters the REV mode.
- (3) After adjustment is completed, set System Setup \*Item 902 to 0.
- (4) Set DIP switch S106 on the SY-61 Board to OFF.
- (5) Install the Cassette-up Compartment.



### Creating the locally-produced-tape

- (1) Prepare a 12cm-long video tape (used out tape is acceptable).
- (2) As shown in the figure, attach adhesive tape across the video tape and make holes in it.
- (3) Make a 10cm-long loop of string through the holes.



#### \* Item 902

For setting, refer to the Setup in 1-7-1. To display this item, turn the SEARCH dial while pressing the PLAY button.

Note: Item 900 series are used only at the factory. Setting should not be thus changed.

When setting is changed, be sure to return it to the initial value.

## 6-1. REEL TABLE SYSTEM ADJUSTMENT

### 6-1-1. Cassette Holder Height Adjustment (L)

**Tool:** Cassette reference plate (L)  
Hex. key (across flat has 1.5 mm)  
Thickness gauge

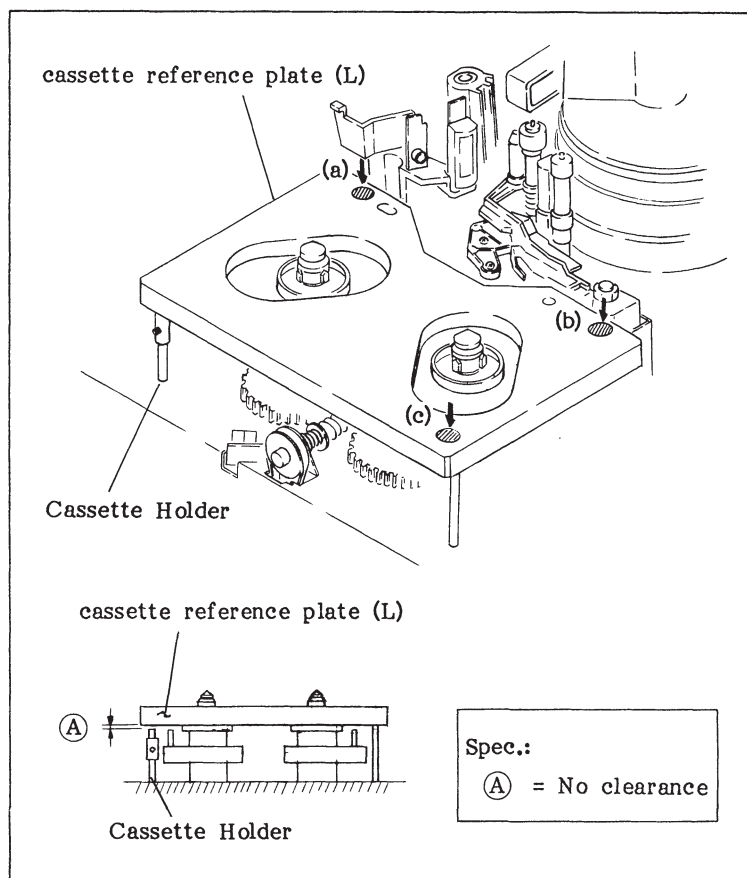
**Mode:** Unthreading end mode

#### Check procedure:

- (1) Install the cassette reference plate (L) at the position for the cassette.
- (2) While lightly pushing the cassette reference plate (L) marked (a), (b), and (c) toward the chassis, check that the clearance between the cassette reference plate (L) and the Cassette Holder meets the required specification.

#### Adjustment procedure:

- (1) Adjust the height of the Cassette Holder to meet the required specification.





### 6-1-2. Cassette Holder Height Adjustment (S)

- It is required that Section 6-1-1, Cassette Holder Height Adjustment (L) is completed before initiating this adjustment.

**Tools:** Cassette reference plate (L)  
Hex. key (across flat has 1.5 mm)  
Inspection mirror

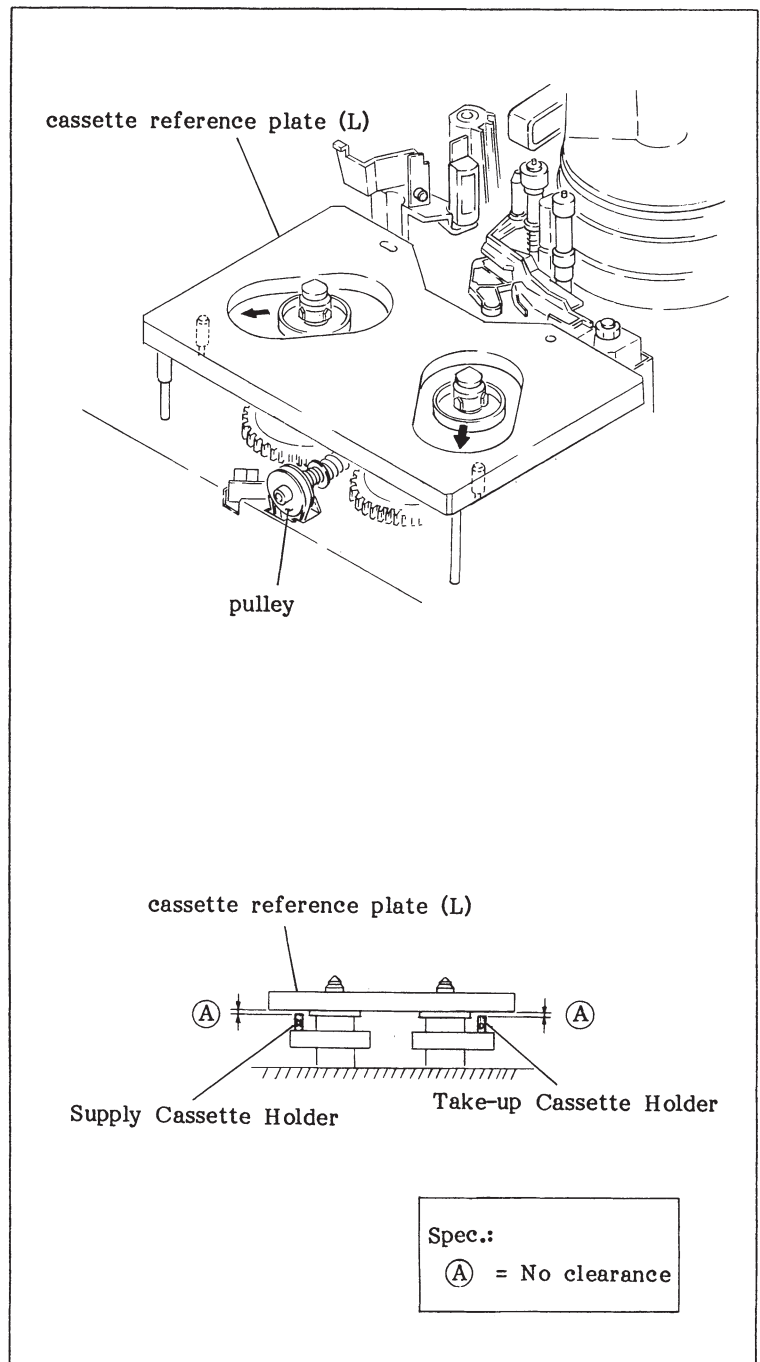
**Mode:** Unthreading end mode

**Check procedure:**

- (1) Install the cassette reference plate (L) at the position for the cassette.
- (2) Turn the pulley by hand so that the Reel Table moves to the position as shown in the figure.
- (3) Insert the cassette reference plate (L) in the Take-up Motor Plate Ass'y, check that there is no clearance between the Cassette Holder for the small cassette and the cassette reference plate (L).
- (4) In the Supply Motor Plate Ass'y, check that there is no clearance between the Cassette Holder for the small cassette and the cassette reference plate (L).

**Adjustment procedure:**

- (1) Adjust the height of the Cassette Holder so that there is no clearance between the cassette reference plate (L) and the Cassette Holder.



### 6-1-3. Reel Motor Shaft Slantness Adjustment

- . This adjustment is usually not required. Proceed with the following steps only when the Reel Motor is replaced.

**Tool:** Cassette reference plate (L)  
 Reel motor shaft slantness check gauge  
 Hex. key (across flat has 1.5 mm)  
 Thickness gauge

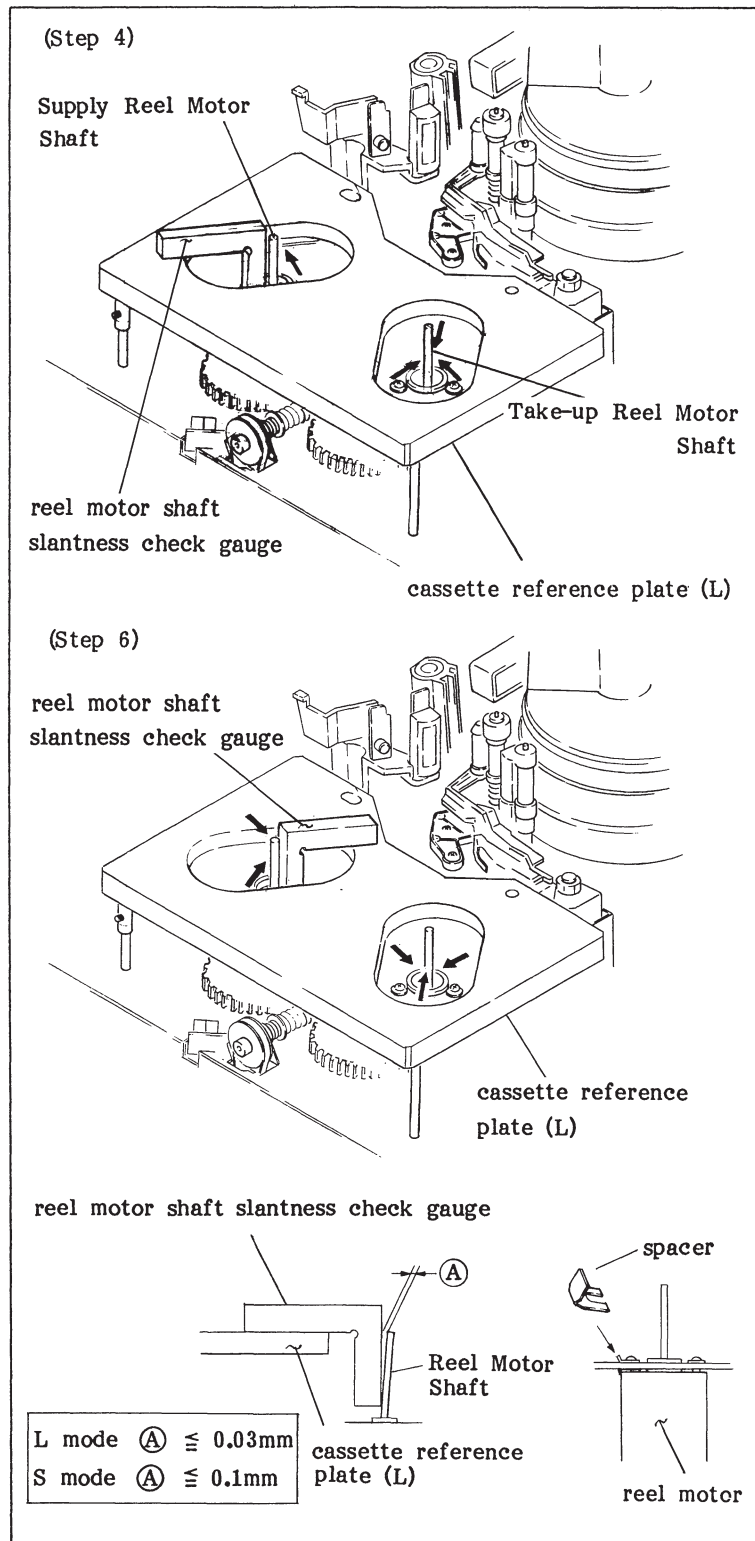
**Mode:** Unthreading end mode

**Check procedure:**

- (1) Put the Reel Block into the L mode.
- (2) Remove the Reel Table as described in replacement procedures (1) to (4) of Section 5-2, Replacement of the Reel Table. (Be careful not to lose the reel table height adjustment poly-slider washer.)
- (3) Install the cassette reference plate (L) at the position for the cassette.
- (4) Check that the clearance between the check gauge and the shaft meets the required specification, when the reel motor shaft slantness check gauge is set on the reel motor shaft from three directions as shown in the figure.
- (5) Put the Reel Block into the S mode.
- (6) Perform as described in procedure (4) again.

**Adjustment procedure:**

- (1) Insert the reel motor spacer at the reel motor mounting screw as shown in the figure.
  - . **Reel motor spacer:**  
 3-717-625-01
- (2) After adjustment, install the Reel Table and perform Section 6-1-4, Reel Table Height Adjustment.



#### 6-1-4. Reel Table Height Adjustment

- . This adjustment is usually not required. Proceed with the following steps when the Reel Motor or Reel Table is replaced.
- . Adjust the Supply Reel Table so that its position is 0.25 mm higher than the position adjusted by the reel table height gauge. Proper tape transport can be then obtained.

**Tool:** Cassette reference plate (L)  
Reel table height gauge  
Hex. key (across flat has 1.5 mm)

**Mode:** Unthreading end mode

**Adjustment procedure:**

- (1) Put the Reel Block into the L mode.
- (2) Install the cassette reference plate (L) at the position for the cassette.
- (3) Move the reel table height gauge from three directions as shown in the figure. Adjust the height by changing the number of washers under the reel table so that the ※ marked portion of the gauge can slide over the Reel Table, while the ※ ※ marked portion is against and cannot slide over the Reel Table.
- (4) Put the Reel Block into the S mode.

**. Adjustment washer:**

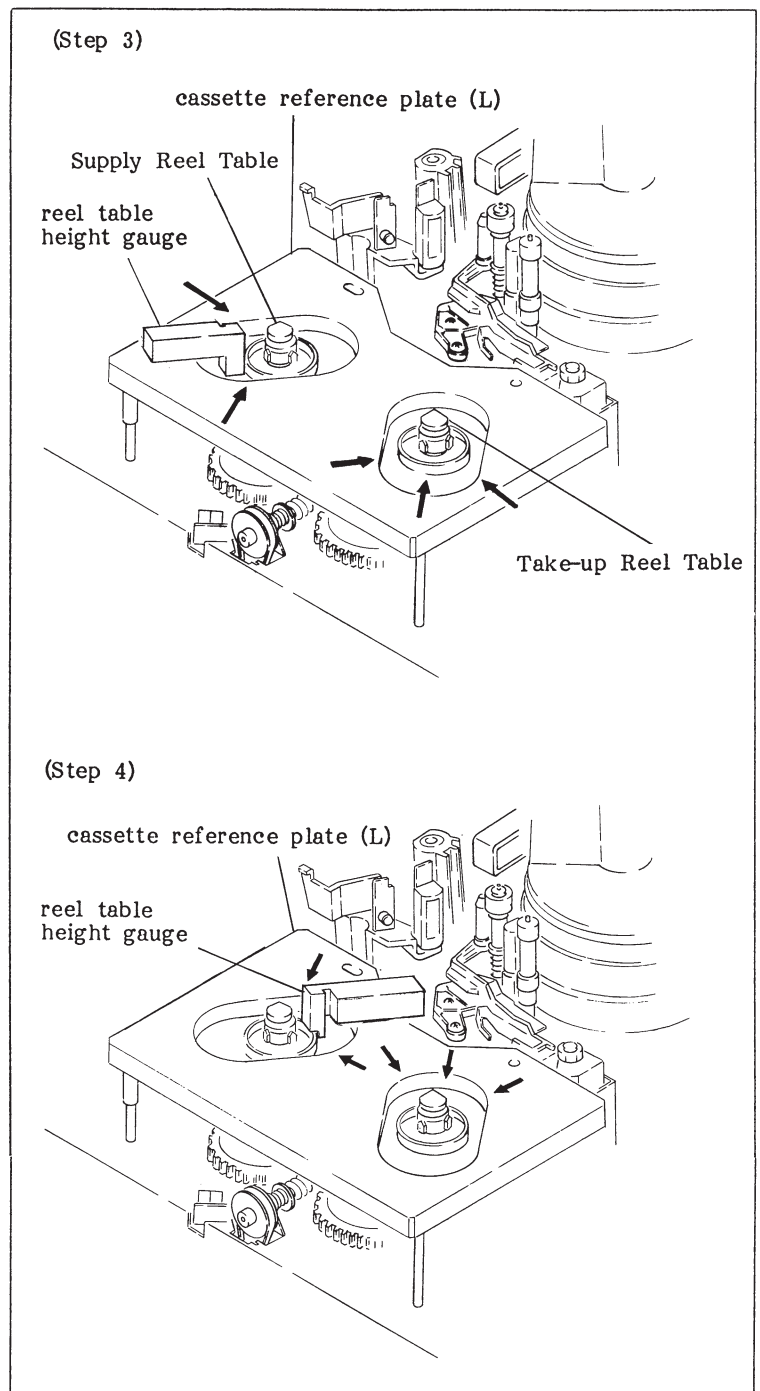
poly-slider washer, 4 mm dia.

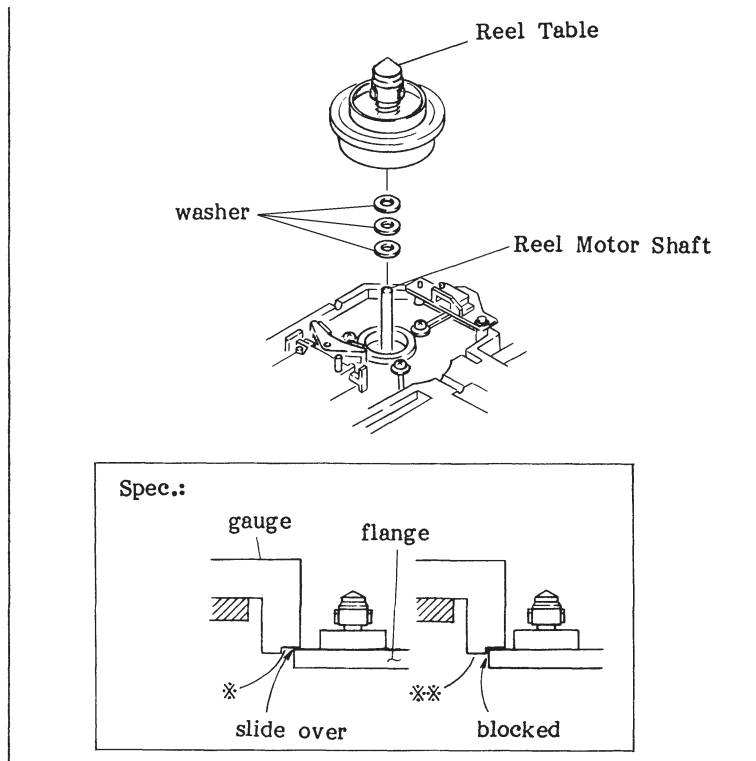
0.13 mm thick      3-701-441-01

0.25 mm thick      3-701-441-11

0.5 mm thick        3-701-441-21

0.05 mm thick      3-188-108-01





#### 6-1-5. Reel Table Rotation Detector Block Position Adjustment

**Tool:** Thickness gauge

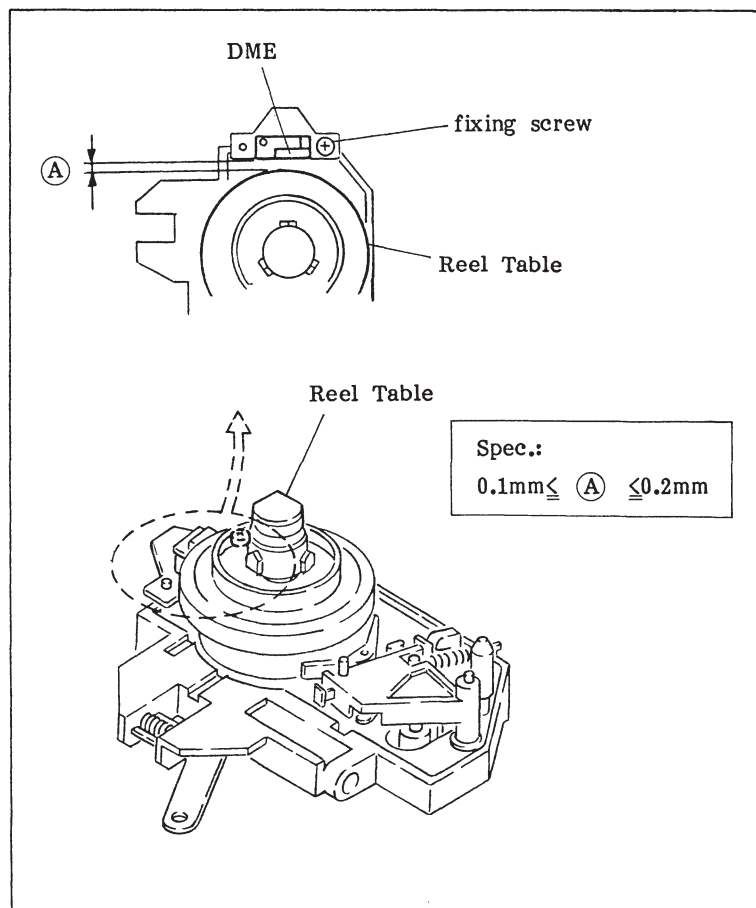
**Mode:** Unthreading end mode (L or S mode)

**Check procedure:**

- (1) Check that the clearance between the Take-up Reel Table/Supply Reel Table and the DME on the Reel Table Rotation Detector meets the required specification.

**Adjustment procedure:**

- (1) Loosen the fixing screw of the Take-up Reel Table Rotation Detector Block.
- (2) Adjust the position of the Reel Table Rotation Detector Block meets the required specification.
- (3) Adjust the position of the Supply Reel Table Rotation Detector Block in the same way.



## 6-2. BRAKE SYSTEM ADJUSTMENT

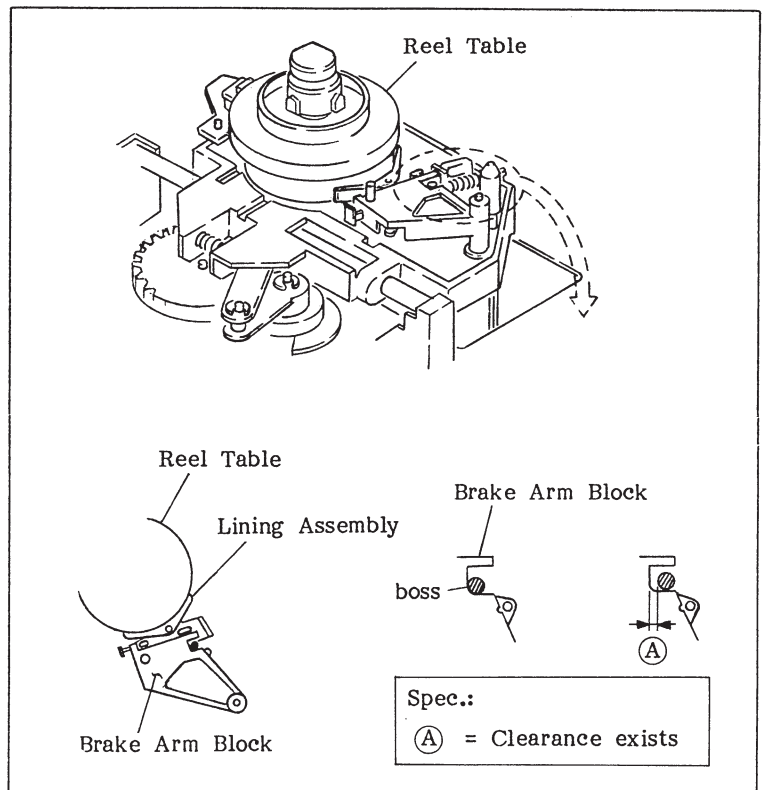
### 6-2-1. Reel Table Brake Clearance Adjustment

#### Check procedure:

- (1) When turning the Take-up Reel Table in the counterclockwise direction by hand, check that the clearance between the Brake Arm Block and the boss exists.
- (2) When turning the Supply Reel Table in the clockwise direction, check that the clearance between the Brake Arm Block and the boss exists.

#### Adjustment procedure:

- (1) Replace the Lining Ass'y as described in Section 5-6, Replacement of the Reel Table Brake.
- (2) Check it again.



### 6-2-2. Reel Table Brake Release Adjustment

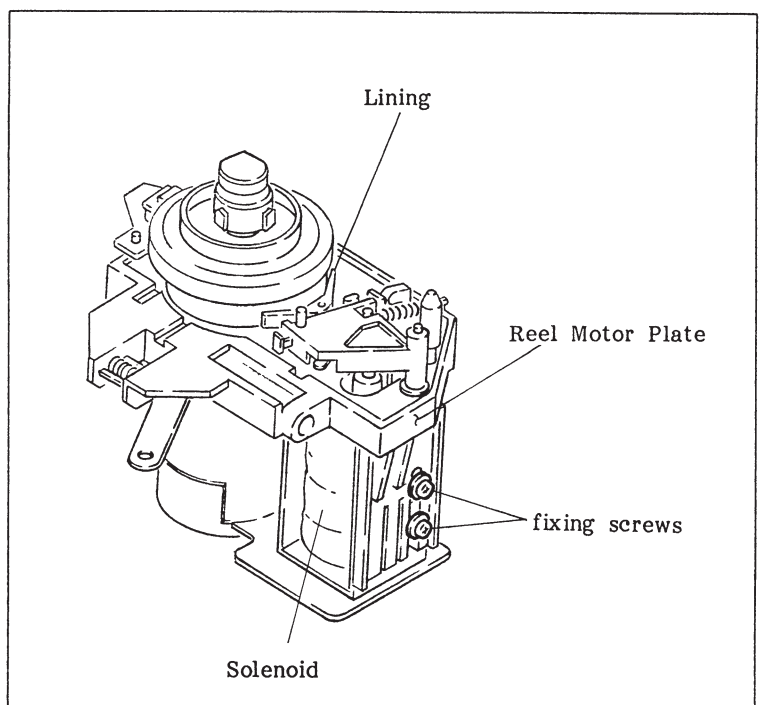
**Mode:** STOP mode (POWER ON)

#### Check procedure:

- (1) Check that the Take-up Reel Lining does not touch the Take-up Reel Table during Take-up Reel Table rotation.
- (2) Check that the Supply Reel Lining does not touch the Supply Reel Table during Supply Reel Table rotation.

#### Adjustment procedure:

- (1) Remove the Reel Motor Plate.
- (2) Loosen the fixing screws of the solenoid.
- (3) Lower the solenoid slight and secure it using the screws.
- (4) Confirm according to the check procedure.
- (5) Install the Reel Motor Plate and perform Section 6-1-2, Cassette Holder Height Adjustment (S); and 6-1-4, Reel Table Height Adjustment.



## 6-3. TENSION REGULATOR SYSTEM ADJUSTMENT

### 6-3-1. Tension Regulator Arm Position Adjustment

. This adjustment is closely related to the video tracking adjustment and the tension regulator arm slantness adjustment.

After this adjustment, perform Section 8-1, Video Tracking Adjustment; and Section 6-3-2, Tension Regulator Arm Slantness Adjustment.

**Tool:** Tension scale (50 g full scale)

Wire clearance gauge

Locally-produced-tape

(Refer to "alignment information".)

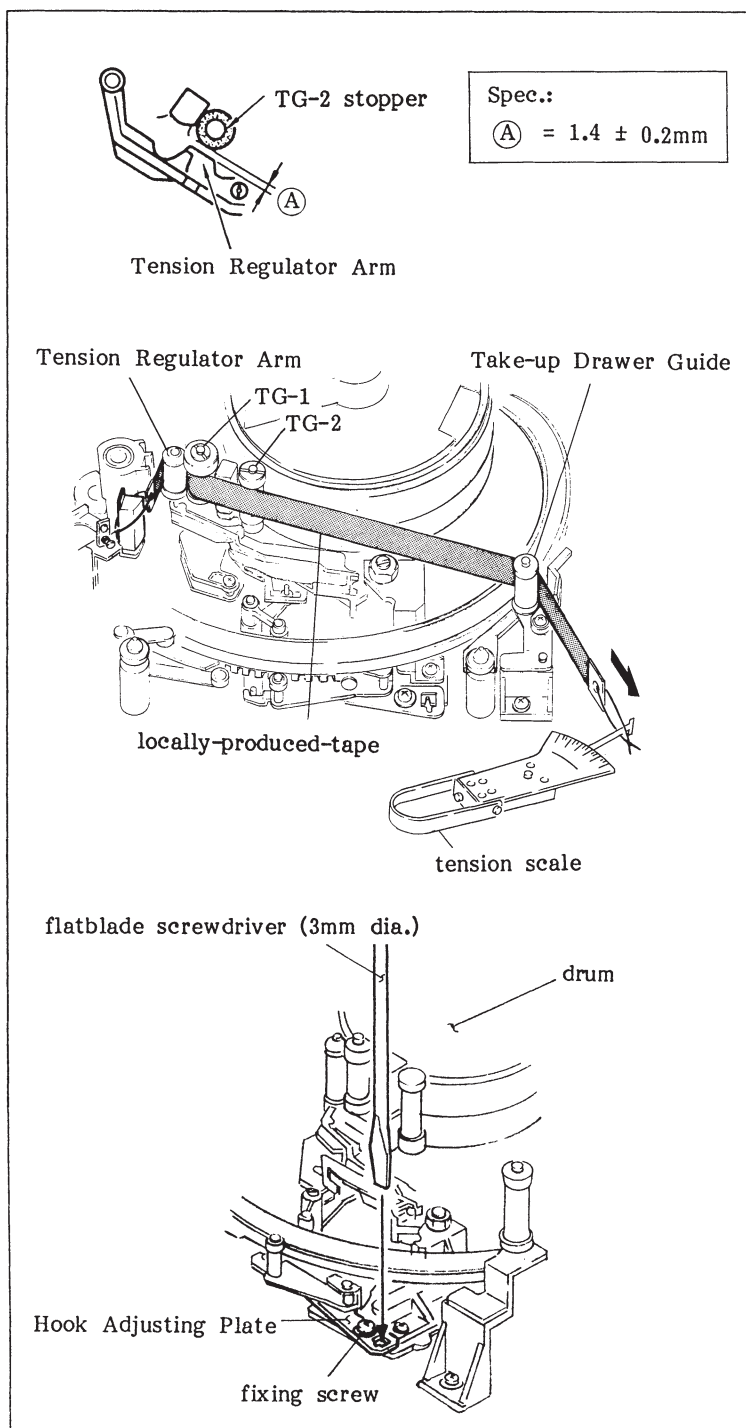
**Mode:** Threading end mode without a cassette.  
(Turn the power OFF.)

#### Check procedure:

- (1) Install the locally-produced-tape as shown in the figure.
- (2) Hook a tension scale to an end of the string. Pull out the tape in the direction of the arrow so that the scale reading is 45 g.
- (3) When the scale reading is 45 g, check that the clearance between the stopper of the Tape Guide (2) and the Tension Regulator Arm meets the required specification.

#### Adjustment procedure:

- (1) Loosen the fixing screw of the Hook Adjustment Plate 1/4 to 1/2 turn.
- (2) Insert a flatblade screwdriver (3 mm dia.) into the adjusting hole as shown in the figure, then adjust it to meet the required specification.
- (3) After adjustment, check as described in the check procedures.





### 6-3-2. Tension Regulator Arm Slantness Adjustment

- . This adjustment is closely related to the video tracking adjustment.
- . After this adjustment, perform Section 8-1, Video Tracking Adjustment.

**Tool:** Cassette reference plate (L)

Tension regulator slantness check tool

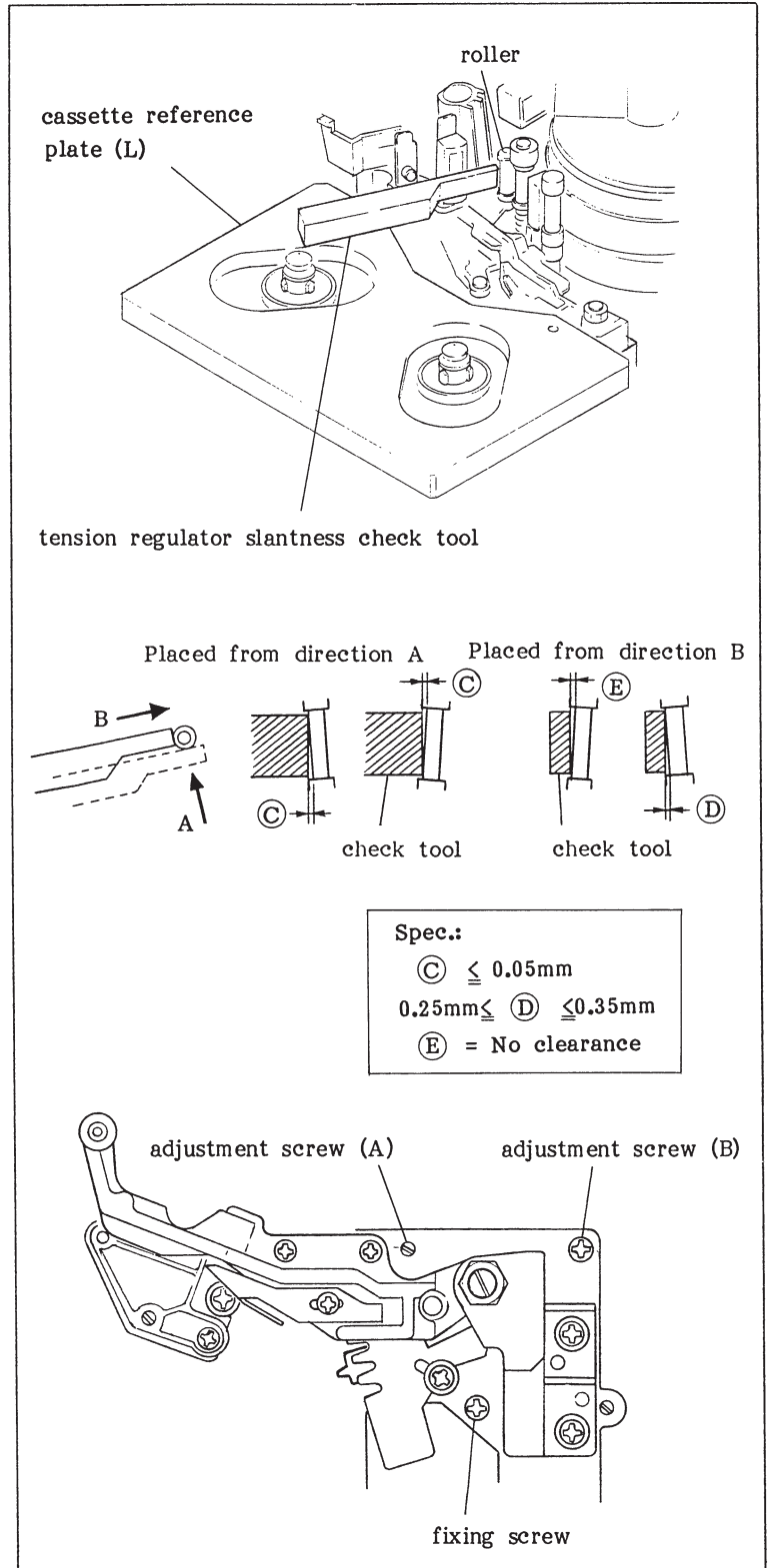
**Mode:** Threading end mode

**Check procedure:**

- (1) Open the RP-29 Boards Block.
- (2) Install the cassette reference plate (L) into the cassette position.
- (3) Place the tension regulator slantness check tool against the Tension Regulator Roller. Check that the slantness of the roller meets the required specification viewed from the direction of arrows A and B as shown in the figure.

**Adjustment procedure:**

- . When the slantness is out of spec. (placed from the direction of arrow A).
  - (1) Loosen the fixing screw 1/2 to 1 turn.
  - (2) Adjust the slantness with the adjustment screws (A) and (B).
  - (3) Tighten the fixing screw and check again.
  - (4) After adjustment, perform the Step (8).
- . When the slantness is out of spec. (placed from the direction of arrow B).
  - (5) Loosen the fixing screw 1/2 to 1 turn.
  - (6) Adjust the slantness with the adjustment screw (B).
  - (7) Tighten the fixing screw and check again.
  - (8) After adjustment, perform Section 6-3-1, Tension Regulator Arm Position Adjustment; Section 8-1, Video Tracking Adjustment.



#### 6-4. THREADING RING ROTATION ADJUSTMENT

- . This adjustment is required only when the Threading Ring or Ring Roller (B) Ass'y is replaced or removed.

**Mode:** Turn the power OFF while rotating the Threading Ring 180 degrees from unthreading end state.

**Check procedure:**

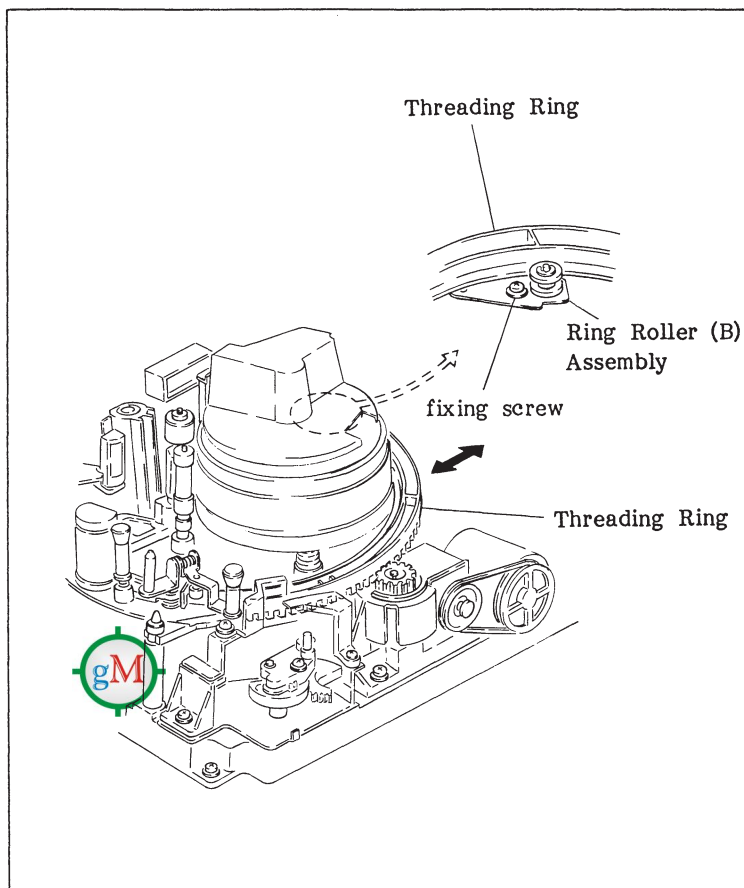
- (1) Open the RP-29 Boards Block.
- (2) Check that the horizontal play meets the required specification when the Threading Ring is pushed in the direction of the arrow by hand.
- (3) Check that the rotation of the Threading Ring into the threading and unthreading modes is smooth.

**Adjustment procedure:**

- (1) Loosen the fixing screw of the Ring Roller (B) Ass'y 1/2 to 1 turn.
- (2) Adjust the position of the Ring Roller (B) Ass'y to meet the required specification.

**Adjusting procedure:**

- . Insert a 0.3 mm thick piece of paper between the Threading Ring and the Ring Roller.
- . The paper of this manual is about 0.1 mm thick so that three pages are 0.3 mm thick.





## 6-5. GEAR BOX POSITION ADJUSTMENT

. It is required that Section 6-4, Threading Ring Rotation Adjustment is correct before initiating this adjustment.

**Tool:** Wire clearance gauge

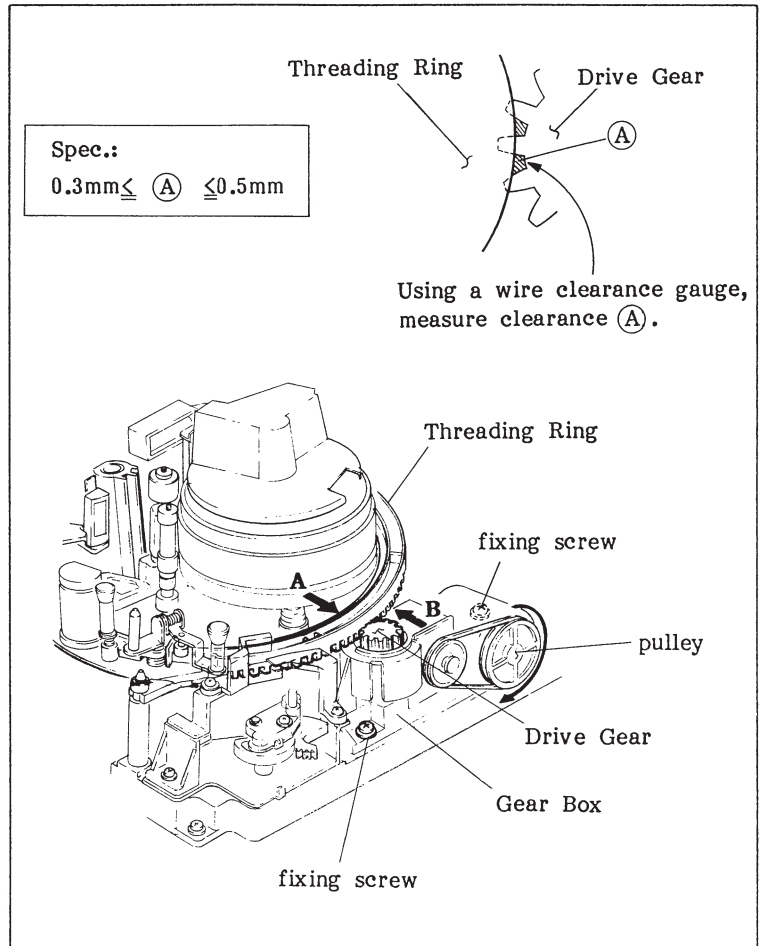
**Mode:** Unthreading end mode

### Check procedure:

- (1) Open the RP-29 Boards Block.
- (2) Turn the pulley of the Gear Box by hand about 90 degrees in the direction of the arrow.
- (3) When pushing the Threading Ring in the direction of arrow (B) by hand, check that the clearance between the Threading Ring and the Drive Gear of the Gear Box meets the required specification with the wire clearance gauge.

### Adjustment procedure:

- (1) Loosen the fixing screws of the Gear Box 1 to 2 turns.
- (2) Press the Threading Ring in the direction of arrow (A), while lightly pushing the Drive Gear of the Gear Box against the Threading Ring.
- (3) Tighten the fixing screws of the Gear Box.
- (4) After adjustment, check as described in the check procedures.



## 6-6. PINCH ROLLER PRESS BLOCK POSITION ADJUSTMENT

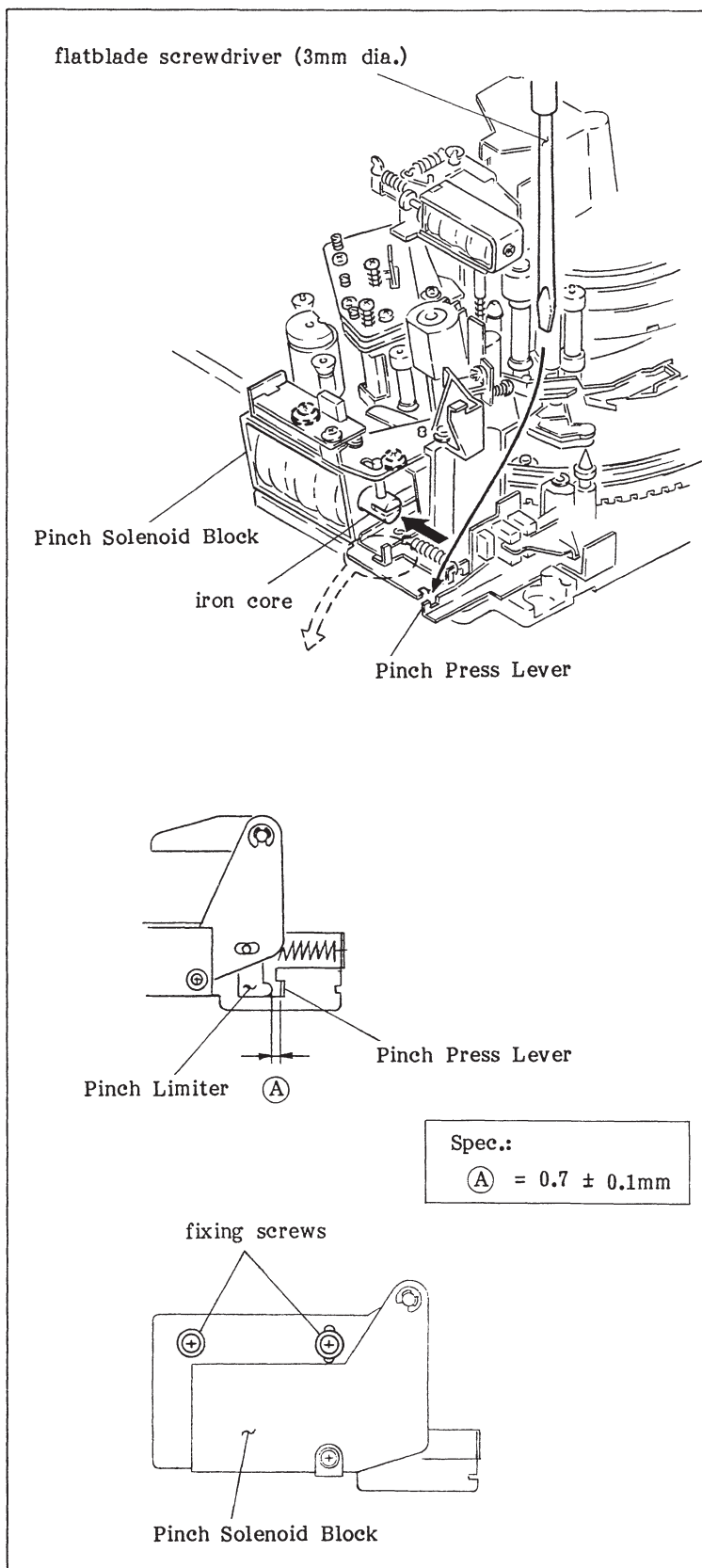
**Mode:** Threading end mode

### Check procedure:

- (1) Open the RP-29 Boards Block.
- (2) Move the iron core of the Pinch Solenoid to the fully energized position in the direction of the arrow.
- (3) Check that the clearance between the Pinch Press Lever and the Pinch Limiter meets the required specification.

### Adjustment procedure:

- (1) Loosen the two fixing screws of the Pinch Solenoid Block 1/4 to 1/2 turn.
- (2) Insert a flatblade screwdriver (3 mm dia.) into the adjusting hole of the Pinch Solenoid Block, then adjust the position of the Pinch Solenoid Block to meet the required specification.
- (3) Tighten the two fixing screws, check as described in the check procedures.



## 6-7. TENSION SENSOR POSITION ADJUSTMENT

**Tool:** Digital multimeter

Tension scale (50 g full scale)

Locally-produced-tape

(Refer to "alignment information".)

**Mode:** STANDBY OFF mode without a cassette tape

**Preparation:**

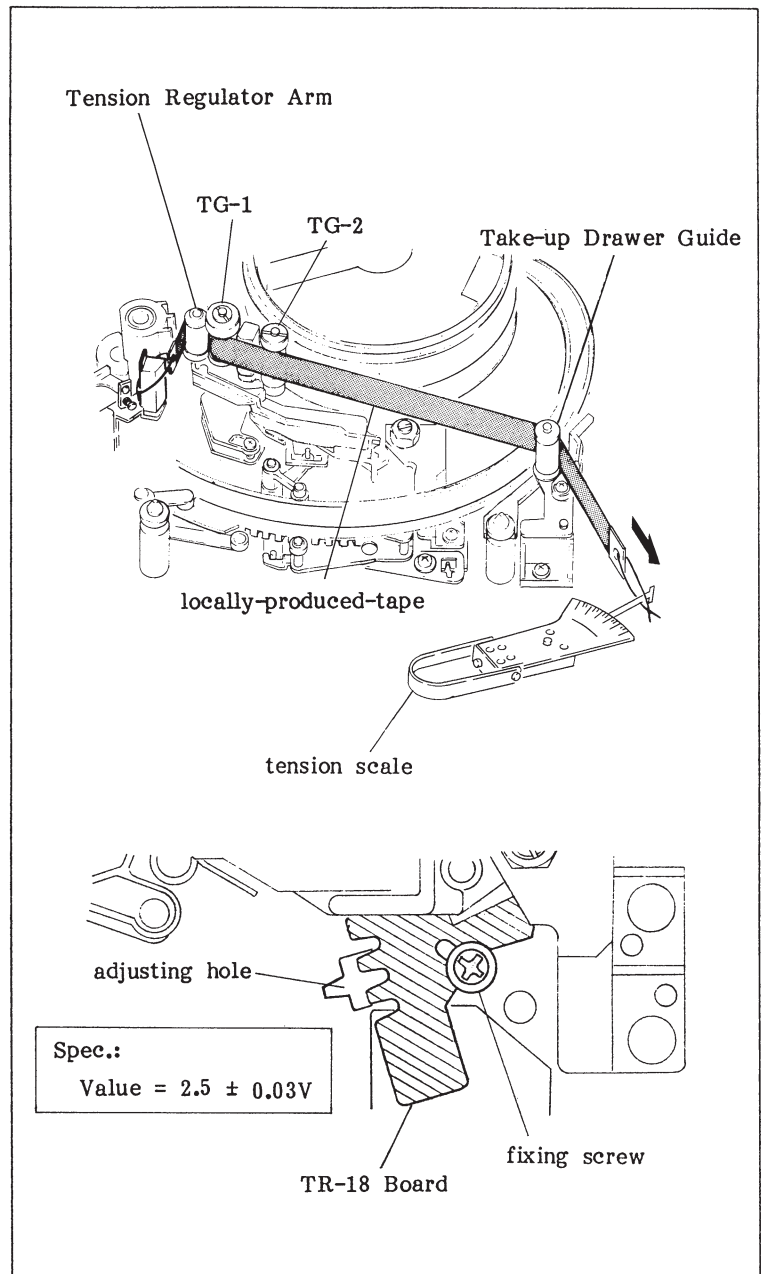
- (1) Extend the SV-83 Board with an Extension Board.
- (2) Connect the digital multimeter to TP3 on the SV-83 Board.

**Check procedure:**

- (1) Install the locally-produced-tape as shown in the figure.
- (2) Hook a tension scale to an end of the string. Pull the tape in the direction of the arrow so that scale reading is 45 g.
- (3) When the scale reading is 45 g, check that the reading of the digital multimeter meets the required specification.

**Adjustment procedure:**

- (1) Loosen the fixing screw of the TR-18 Board about 1/4 to 1/2 turn.
- (2) Insert a flatblade screwdriver (3 mm dia.) into the adjustment hole, then adjust the position of the TR-18 Board to meet the required specification.
- (3) Tighten the fixing screw, check that it meets the required specification again.
- (4) After adjustment, perform Section 6-8, Tension Sensor Sensitivity Adjustment.



## 6-8. TENSION SENSOR SENSITIVITY ADJUSTMENT

- It is required that Section 6-7, Tension Sensor Position Adjustment is correct before initiating this adjustment.

**Tool:** Digital multimeter  
Tension scale (50 g full scale)  
Locally-produced-tape  
(Refer to "alignment information".)

**Mode:** STANDBY OFF mode without a cassette tape

### Preparation:

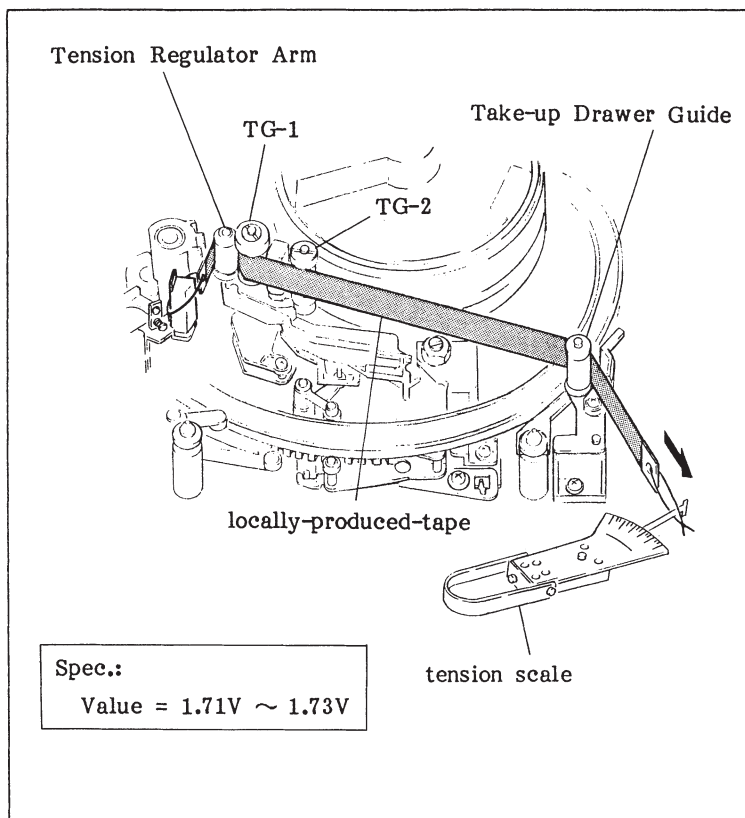
- Extend the SV-83 Board with an Extension Board.
- Connect the digital multimeter to TP3 on the SV-83 Board.

### Check procedure:

- Install a locally-produced-tape as shown in the figure.
- Hook a tension scale to an end of the string. Pull the tape in the direction of the arrow so that scale reading is 25 g.
- When the scale reading is 25 g, check that the reading of the digital multimeter meets the required specification.

### Adjustment procedure:

- Adjust RV3 on the SV-83 Board to meet the required specification.
- After adjustment, check that it meets the required specification again.



## 6-9. CLEANING ROLLER POSITION ADJUSTMENT

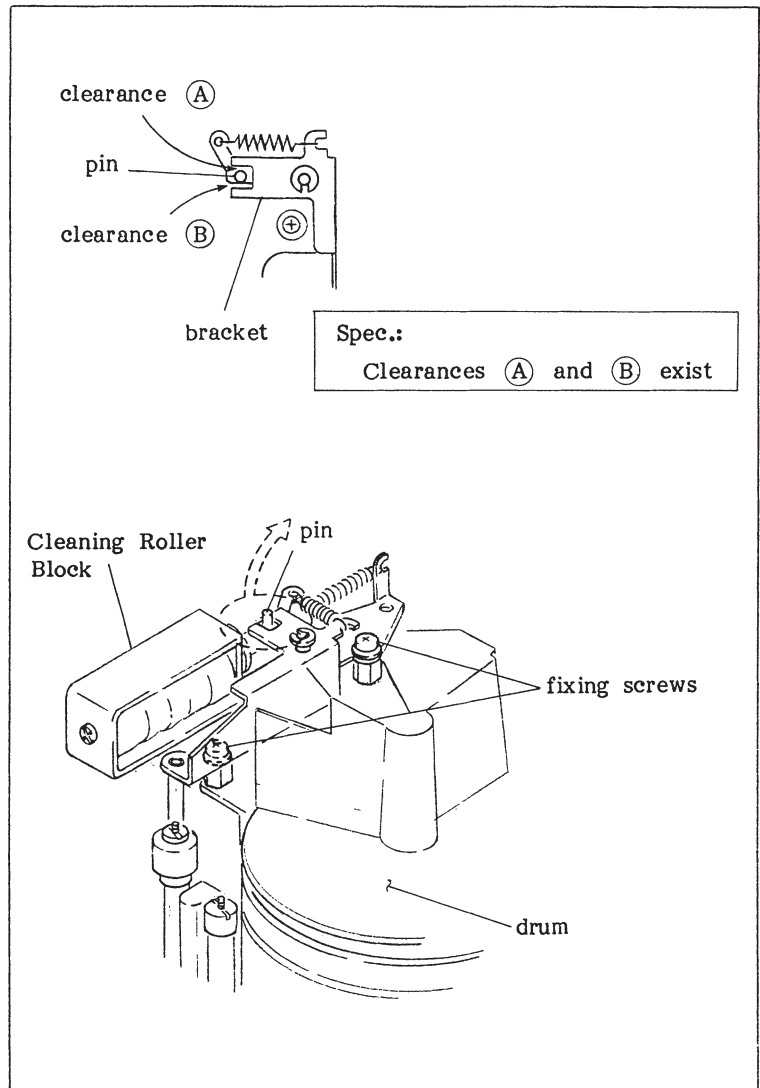
**Mode:** Unthreading end mode

**Check procedure:**

- (1) Turn the power ON, short between TP-1 on the PD-35 Board and the chassis with a shorting clip.
- (2) Check that the clearance between the Cleaning Roller Block Pin and the bracket meets the required specification.
- (3) Insert the cassette tape in F.FWD mode. Check that the clearance between the pin and the bracket meets the required specification.
- (4) If the specification is met, remove the shorting clip. (If the shorting clip is shorting for a long time, the internal fuse of the Cleaning Roller Solenoid will be blown.)

**Adjustment procedure:**

- (1) Loosen the two fixing screws of the Cleaning Roller Block and adjust the position to meet the required specification as described in procedure (1).
- (2) Check as described in the check procedure (3).
- (3) Remove the shorting clip.





# SECTION 7

## TORQUE ALIGNMENT

### ALIGNMENT INFORMATION

#### MODES

##### Unthreading end mode

This indicates the EJECT completion mode. At the time of ejection, the tension regulator arm and threading ring are completely returned to the cassette tape side.

##### Threading mode

When the STOP button is pressed, the threading ring rotates counterclockwise.

##### Threading end mode (STOP mode)

When the STOP button is pressed, the threading ring rotates counterclockwise, and the threading ring rotation is then stopped.

##### PLAY mode without a cassette tape

- (1) Remove the Cassette-up Compartment (refer to Section 4-2).
- (2) Set DIP switch S106 on the SY-61 Board to ON.
- (3) Set System Setup \*Item 902 to 1.  
(At that time, message "Error" appears on the time counter display of the front panel. The unit is activated normally irrespective of its message.)
- (4) When the STOP button is pressed, the threading ring rotates counterclockwise, and the threading ring rotation is stopped. The STANDBY lamp then lights, and the unit enters the STOP mode.
- (5) When the PLAY button is pressed, the pinch roller is pressed against the capstan shaft, and the unit enters the PLAY mode.
- (6) After adjustment is completed, set System Setup \*Item 902 to 0.
- (7) Set DIP switch S106 on the SY-61 Board to OFF.
- (8) Install the Cassette-up Compartment.

##### STANDBY OFF mode without a cassette tape

- (1) Put the unit into the STOP mode without a cassette tape (refer to Steps 1 through 4 described above).
- (2) Press the STANDBY button after the STANDBY lamp lights.  
The STANDBY lamp then goes off, and the unit enters the STANDBY OFF mode in which the drum rotation is stopped.
- (3) After adjustment is completed, set System Setup \*Item 902 to 0.
- (4) Set DIP switch S106 on the SY-61 Board to OFF.
- (5) Install the Cassette-up Compartment.

### **REV mode without a cassette tape**

- (1) Put the set into the STOP mode without a cassette tape.
- (2) Turn the search dial counterclockwise. The unit then enters the REV mode.
- (3) After adjustment is completed, set System Setup \*Item 902 to 0.
- (4) Set DIP switch S106 on the SY-61 Board to OFF.
- (5) Install the Cassette-up Compartment.

#### **\* Item 902**

For setting, refer to the Setup in 1-7-1. To display this item, turn the SEARCH dial while pressing the PLAY button.

Note: Item 900 series are used only at the factory. Setting should not be thus changed.

When setting is changed, be sure to return it to the initial value.



## 7-1. BRAKE TORQUE CHECK

### 7-1-1. S Brake Torque Check

**Tool:** Reel table tension gauge  
Tension scale (100 g full scale)

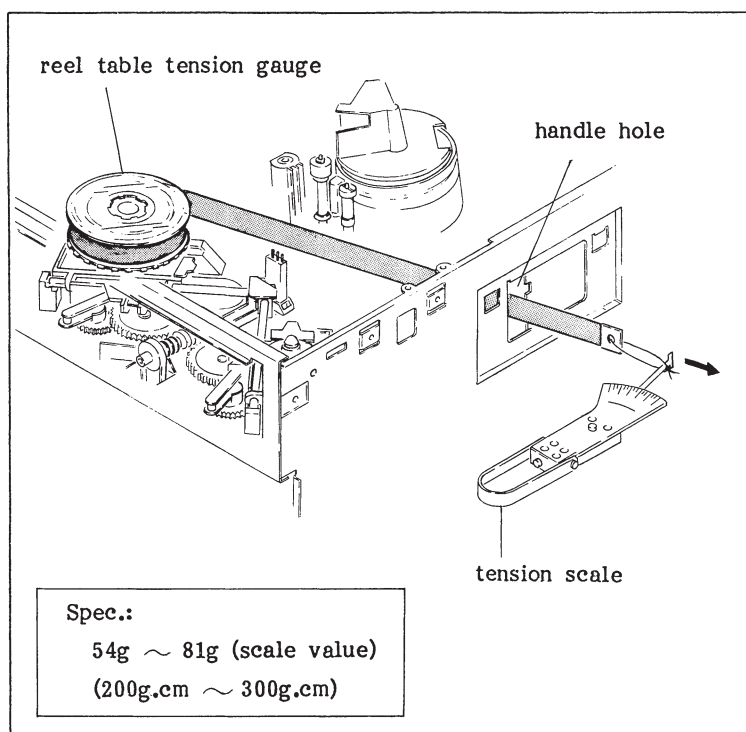
**Mode:** Threading end mode

**Preparation:**

- (1) Remove the handle on the right side.
- (2) Open the RP-29 Boards Block.
- (3) Remove the Tape Beginning Sensor.

**Check procedure:**

- (1) Wind the tape to the reel table tension gauge in the clockwise direction.
- (2) Install the reel table tension gauge on the Supply Reel Table. Pass the end of the tape out for the unit from the hole of the handle.
- (3) Hook a tension scale to an end of the string. Move the tension scale in the direction of the arrow, check that the scale reading meets the required specification.



### 7-1-2. T Brake Torque Check

**Tool:** Reel table tension gauge  
Tension scale (100 g full scale)

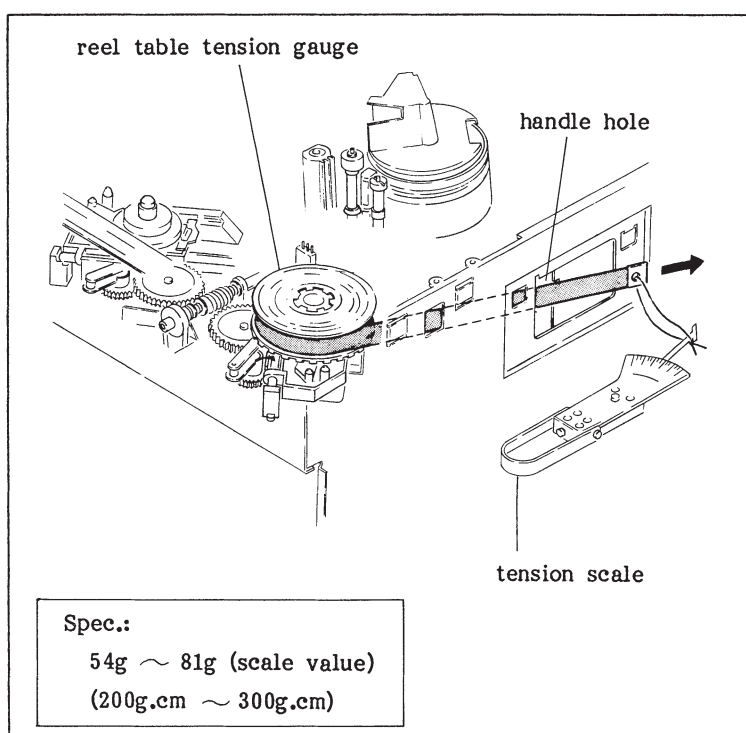
**Mode:** Threading end mode

**Preparation:**

- (1) Remove the handle on the right side.
- (2) Open the RP-29 Boards Block.
- (3) Remove the Tape Beginning Sensor.

**Check procedure:**

- (1) Wind the tape to the reel table tension gauge in the counterclockwise direction.
- (2) Install the reel table tension gauge on the Take-up Reel Table. Pass the end of the tape out for the unit from the hole of the handle.
- (3) Hook a tension scale to an end of the string. Move the tension scale in the direction of the arrow, check that the scale reading meets the required specification.



## 7-2. REEL TORQUE ADJUSTMENT

### 7-2-1. Reel Zero Gram Torque Adjustment

. After this adjustment, perform the Section  
7-2-2 Reel 250 Gram Torque Adjustment.

**Tool:** Oscilloscope

**Mode:** Threading end mode

**Preparation:**

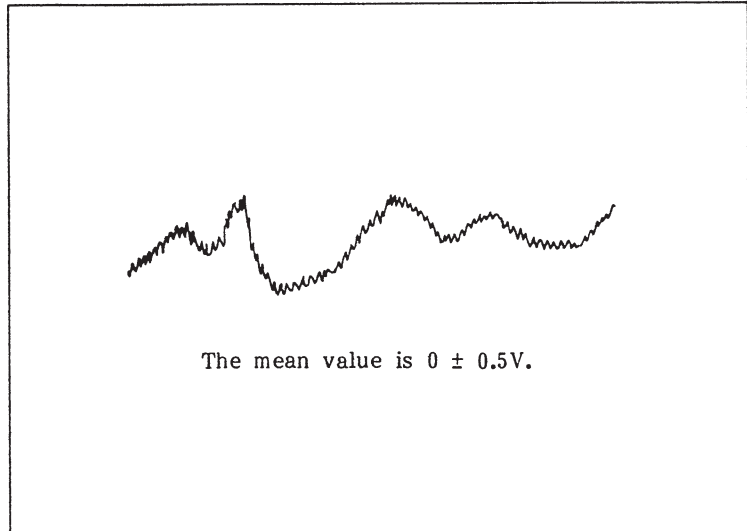
- (1) Set DIP switch S101-Bit 1 on the SV-82 Board to ON.
- (2) Without inserting a cassette tape, press the STOP button. Then the unit is put into the threading mode.
- (3) Short between TP4 on the SV-82 Board and GND with a shorting clip.
- (4) Connect the oscilloscope to TP13 on the SV-83 Board.

**Check procedure:**

- (1) Check that the voltage at TP13 meets the required specification.
- (2) Connect the oscilloscope to TP14 on the SV-83 Board.
- (3) Check that the voltage at TP14 meets the required specification.
- (4) Perform Steps (3) and (4) of the adjustment procedure so that the voltages at TP13 and TP14 meet the both specifications.

**Adjustment procedure:**

- (1) Adjust RV15 on the SV-83 Board to meet the required specification at TP13.
- (2) Adjust RV16 on the SV-83 Board to meet the required specification at TP14.
- (3) Remove the shorting clip between TP4 and GND. Press the EJECT button, then the unit is put into the unthreading mode.
- (4) Set DIP switch S101-Bit 1 to OFF.



## 7-2-2. Reel 250 Gram Torque Adjustment

. It is required that Section 7-2-1 Reel Zero Gram Torque Adjustment is correct before initiating this adjustment.

**Tool:** Reel table tension gauge  
Tension scale (100 g full scale)

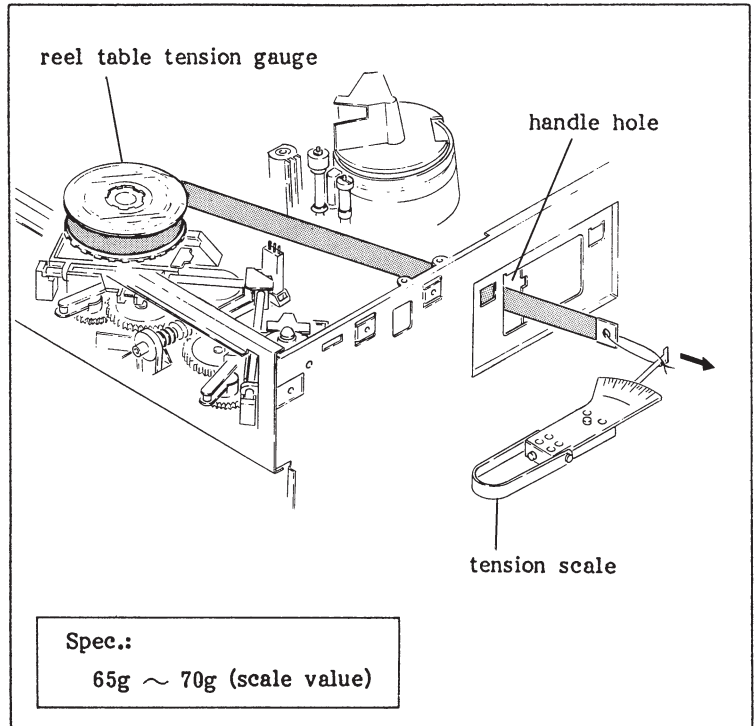
**Mode:** Threading end mode

### Preparation:

- (1) Remove the handle on the right side.
- (2) Open the RP-29 Board Block.
- (3) Remove the tape beginning sensor.
- (4) Set DIP switch S101-Bit 1 on the SV-82 Board to ON.
- (5) Without inserting a cassette tape, press the STOP button. The unit is then put into the threading mode.
- (6) Short between TP4 on the SV-82 Board and GND with a shorting clip.
- (7) Set DIP switch S101-Bit 1 on the SV-82 Board to OFF.

### Check procedure:

- (1) Wind the tape to the reel table tension gauge in the clockwise direction.
- (2) Stop the rotation of the Supply Reel Table by hand and install the reel table tension gauge on the Supply Reel Table. Pass the end of the tape out for the unit from the hole of the handle.
- (3) Hook a tension scale to an end of the string. Move the tension scale in the direction of the arrow and check that the scale reading is 65 to 70g.
- (4) Remove the reel table tension gauge from the Supply Reel Table and wind the tape to the reel table tension gauge in the counterclockwise direction.
- (5) Stop the rotation of the Take-up Reel Table by hand and install the reel table tension gauge on the Take-up Reel Table. Pass the end of the tape out for the unit from the hole of the handle.
- (6) Hook a tension scale to an end of the string. Move the tension scale in the direction of the arrow and check that the scale reading is 65 to 70g.



- (7) Perform Steps (3) and (4) of the adjustment procedure so that scale readings meet the both specifications.

**Adjustment procedure:**

- (1) Adjust RV4 on the SV-83 Board to meet the required specification at supply side.
- (2) Adjust RV13 on the SV-83 Board to meet the required specification at take-up side.
- (3) Set DIP switch S101-Bit 1 on the SV-82 Board to ON and remove the shorting clip between TP4 and GND.
- (4) Press the EJECT button. The unit is then put into the unthreading mode. After the unthreading is completed, set DIP switch S101-Bit 1 on the SV-82 Board to OFF.

## SECTION 8

# TAPE RUN ALIGNMENT

### ALIGNMENT INFORMATION

#### MODES

##### Unthreading end mode

This indicates the EJECT completion mode. At the time of ejection, the tension regulator arm and threading ring are completely returned to the cassette tape side.

##### Threading mode

When the STOP button is pressed, the threading ring rotates counterclockwise.

##### Threading end mode (STOP mode)

When the STOP button is pressed, the threading ring rotates counterclockwise, and the threading ring rotation is then stopped.

##### PLAY mode without a cassette tape

- (1) Remove the Cassette-up Compartment (refer to Section 4-2).
- (2) Set DIP switch S106 on the SY-61 Board to ON.
- (3) Set System Setup \*Item 902 to 1.  
(At that time, message "Error" appears on the time counter display of the front panel. The unit is activated normally irrespective of its message.)
- (4) When the STOP button is pressed, the threading ring rotates counterclockwise, and the threading ring rotation is stopped. The STANDBY lamp then lights, and the unit enters the STOP mode.
- (5) When the PLAY button is pressed, the pinch roller is pressed against the capstan shaft, and the unit enters the PLAY mode.
- (6) After adjustment is completed, set System Setup \*Item 902 to 0.
- (7) Set DIP switch S106 on the SY-61 Board to OFF.
- (8) Install the Cassette-up Compartment.

##### STANDBY OFF mode without a cassette tape

- (1) Put the unit into the STOP mode without a cassette tape (refer to Steps 1 through 4 described above).
- (2) Press the STANDBY button after the STANDBY lamp lights.  
The STANDBY lamp then goes off, and the unit enters the STANDBY OFF mode in which the drum rotation is stopped.
- (3) After adjustment is completed, set System Setup \*Item 902 to 0.
- (4) Set DIP switch S106 on the SY-61 Board to OFF.
- (5) Install the Cassette-up Compartment.

### REV mode without a cassette tape

- (1) Remove the Cassette-up Compartment (refer to 4-2).
- (2) Set DIP switch S106 on the SY-61 Board to ON.
- (3) Set System Setup \*Item 902 to 1.  
(At that time, message "Error" appears on the time counter display of the front panel.  
This unit is activated normally irrespective of its message.)
- (4) When the STOP button is pressed, the threading ring rotates counterclockwise, and the threading ring rotation is stopped. The STANDBY lamp then lights, and the unit enters the STOP mode.
- (5) Turn the search dial counterclockwise. The unit then enters the REV mode.
- (6) After adjustment is completed, set System Setup \*Item 902 to 0.
- (7) Set DIP switch S106 on the SY-61 Board to OFF.
- (8) Install the Cassette-up Compartment.

### Creating the Cassette Tape without Lid

Since the VTR is compact, some checks and adjustments cannot be performed if a cassette tape lid is installed. Remove the cassette tape lid as follows:

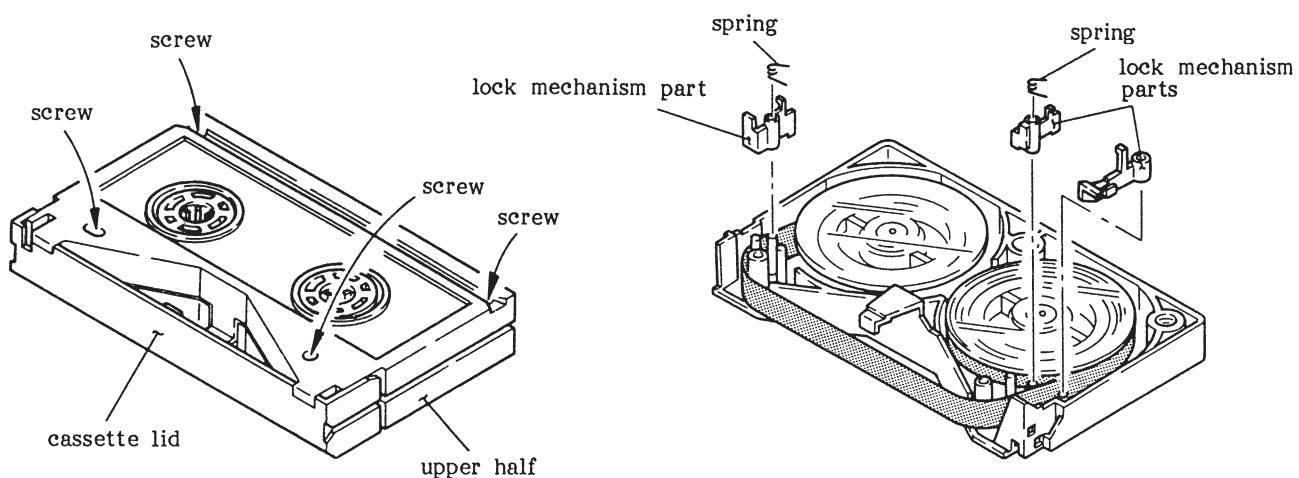
- (1) As shown in the figure, remove the four screws on the back of cassette tape BCT-20M and remove the upper half of the cassette tape.
- (2) Remove the lock mechanism parts and the springs on the left and right.
- (3) Remove the cassette lid from the upper half.
- (4) Install the upper half on the lower half with four screws from the back side.

#### \* Item 902

For setting, refer to the Setup in 1-7-1. To display this item, turn the SEARCH dial while pressing the PLAY button.

Note: Item 900 series are used only at the factory. Setting should not be thus changed.

When setting is changed, be sure to return it to the initial value.



### Creating the Alignment tape without Lid

Since the VTR is compact, tracking is difficult to adjust if an alignment tape is installed. Remove the lid of alignment tape CR2-1B for tracking adjustment. For removing, refer to the "Creating the Cassette Tape without Lid".

## ALIGNMENT INFORMATION

### ALIGNMENT TAPE

- . Alignment tape for tracking adjustment  
CR2-1B (8-960-096-01)

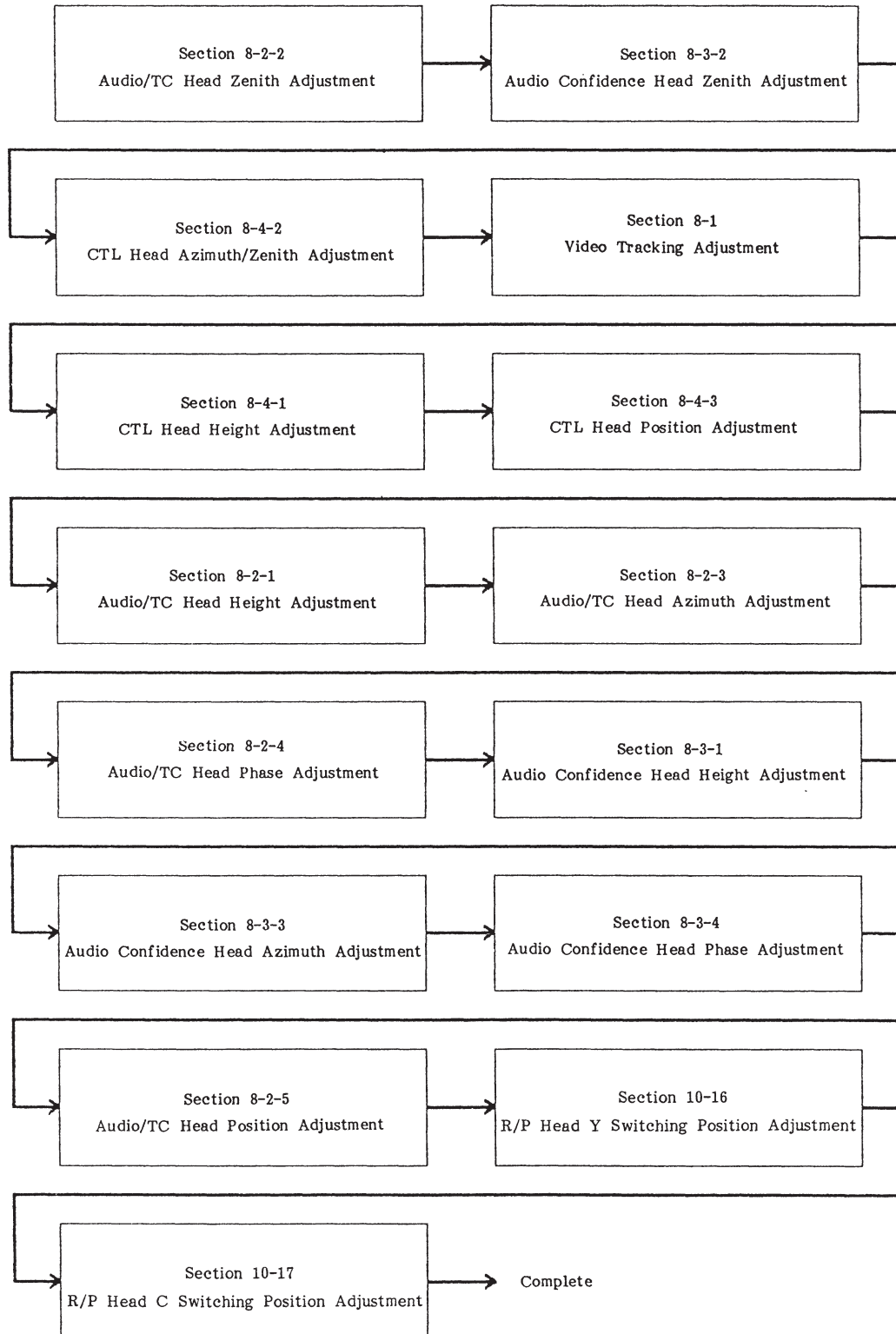
Description	Usage
Video, Y track: 4MHz C track: 5MHz Audio, blank TC, CTL signal	<ul style="list-style-type: none"><li>. Video tracking adjustment</li><li>. CTL head position adjustment</li><li>. TC head position adjustment</li><li>. Switching position adjustment</li></ul>

- . Alignment tape for general adjustment  
CR8-1A (8-960-097-45)

Description	Usage
1kHz, 0 VU	<ul style="list-style-type: none"><li>. Reference Level</li></ul>
10kHz, -10 VU	<ul style="list-style-type: none"><li>. Phase</li></ul>
1kHz, -20 VU	<ul style="list-style-type: none"><li>. Frequency Response</li></ul>
40, 7k, 10k, 15kHz	<ul style="list-style-type: none"><li>. Frequency Response</li></ul>
1kHz, 0 VU Audio, Ch-1, Ch-2, CTL	<ul style="list-style-type: none"><li>. Audio/CTL hieght</li></ul>

## TRACKING ADJUSTMENT

- . The tracking adjustment is required to be performed in the following order:





## 8-1. VIDEO TRACKING ADJUSTMENT

**Tool:** Alignment tape, CR2-1B

Oscilloscope

Hex. key (across flat has 1.27 mm)

Inspection mirror

**Mode:** Play back the alignment tape

### Preparation:

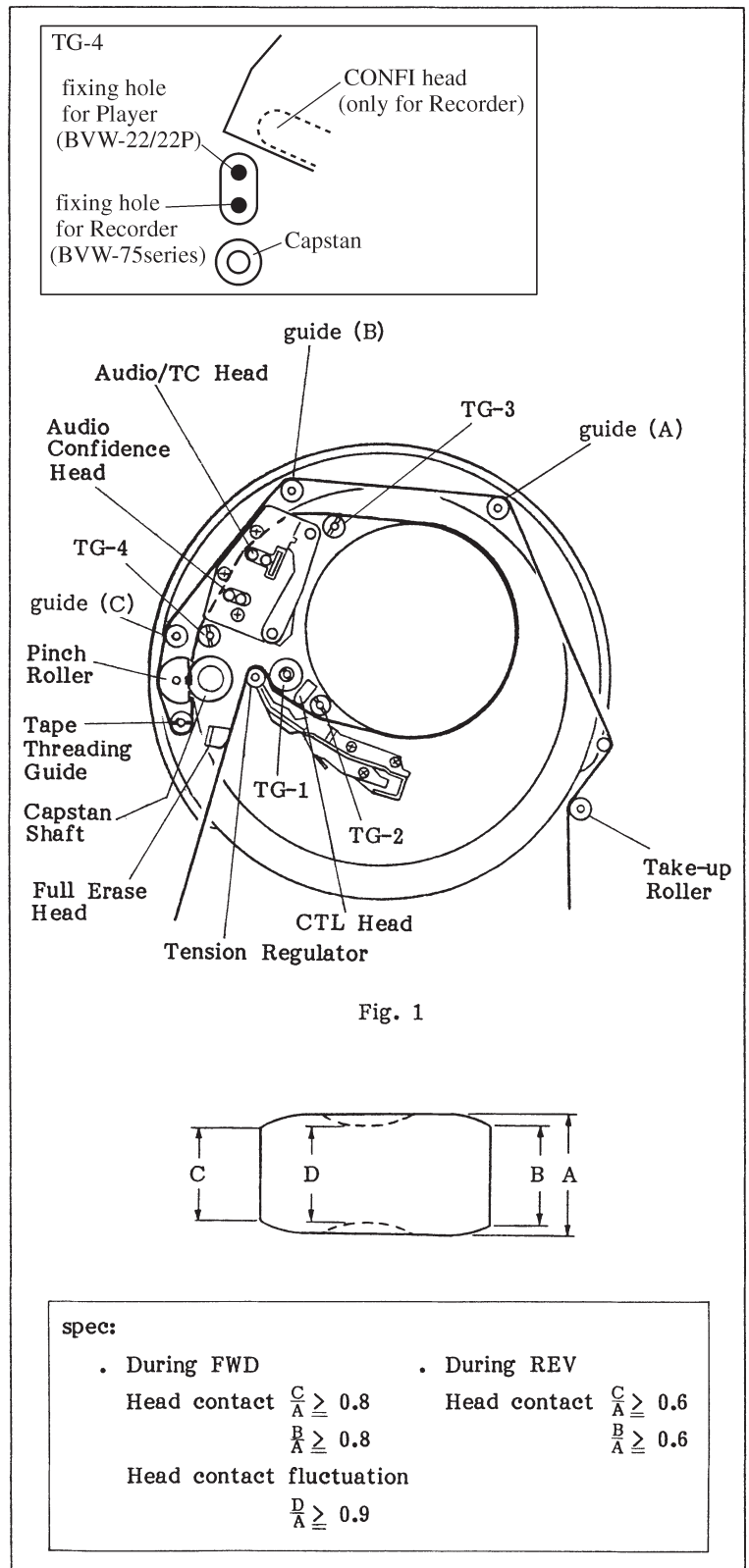
- (1) Turn DIP switch S101-Bit4 on the SV-82 Board to "ON". (The phi-square servo circuit is off.)
- (2) Turn DIP switch S1 on the SV-83 Board to "ON". (The H-LOCK servo circuit is off.)
- (3) Remove the DM-56 Board. Extend it with an Extension Board.
- (4) Connect the oscilloscope as follows:  
CH-1: TP6/DM-56 Board  
EXT. TRIG: TP26/DM-56 Board
- (5) Play back the alignment tape.

### Check procedure:

- (1) When turn the TRACKING control knob, check that the RF waveform maintains a flat envelope while the amplitude increases and decreases.
- (2) Check that the RF envelope fluctuation and head-to-tape contact are within the specification at the FIXED position of the TRACKING control knob.
- (3) Check that the tape curls at the Tension Regulator, TG-1, TG-2, TG-3, and the Tape Threading Guide meets the required specification. (Refer to the adjustment procedure for specification.)
- (4) Check that the RF envelope head-to-tape contact is within the specification in the about REV x 1 mode.

### Adjustment procedure:

- . When adjust the tape guide height.  
Loosen the setscrews of each tape guide in upper portion and adjust with the adjusting nut.



. When the tracking at the drum entrance side is not good.

- (1) Turn the adjusting nuts of TG-1 and TG-2. Make clearances at (a) and (b) of TG-1 and (a) and (b) of TG-2 as shown in figure 2.
- (2) Turn the adjusting nut of the Tension Regulator so that the RF waveform envelope changes from state (i) to state (ii) as shown in Fig. 3. Check that the tape runs in contact with the guide flange at the (a) portion of the Tension Regulator. If not, turn adjustment screw (b) of the Tension Regulator in counter-clockwise direction as shown in Fig. 4.
- (3) Turn the adjusting nut of TG-2 so that the tape runs in contact with the guide flange at the (b) portion of TG-2 and the RF waveform envelope flattens. Check that the tape does not in contact with the guide flange at the (b) portion of TG-1. The tape curl at the (a) portion of Tension Regulator and/or (b) portion of TG-2 is acceptable within the range shown in Fig. 5. Tape curl at the drum, however, is not acceptable.
- (4) Turn the TRACKING control knob to the FIXED position. Put the unit into the REV x 1 mode.
- (5) Check that the RF waveform envelope is small at the drum entrance side as shown in Fig. 6.
- (6) Put the unit into the PLAY mode. Turn the adjusting nut of TG-1 so that the tape runs in contact with the guide flange at the (a) portion. The tape curl at (a) portion is acceptable within the range shown in Fig. 5.
- (7) Put the unit into the REV x 1 mode. Check that the RF envelope waveform is flat and the tape-to-head contact meets the required specification.

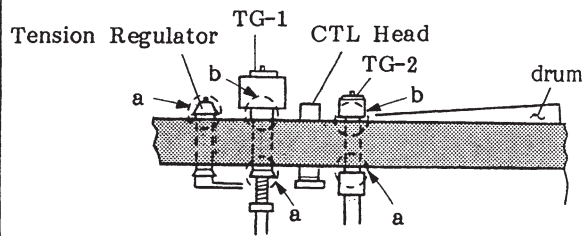
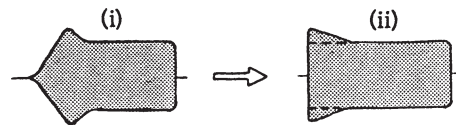


Fig. 2



When tape portion "a" of the Tension Regulator shown in Fig. 2 is pressed down, the waveform should be flat.

Fig. 3

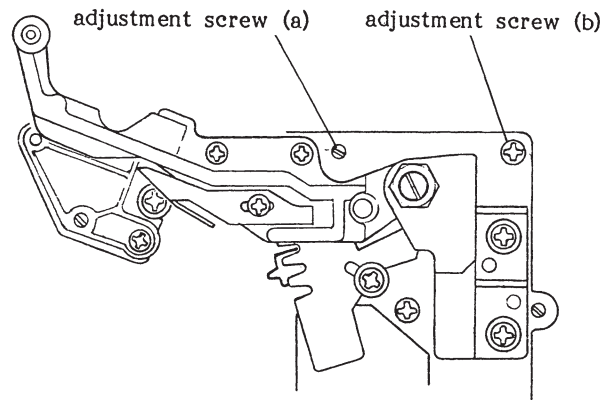


Fig. 4

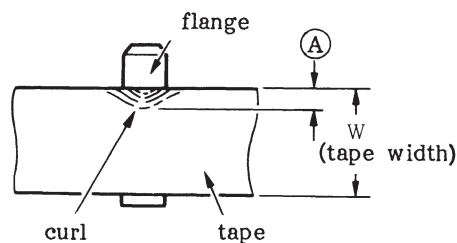


Fig. 5

spec:  

$$\textcircled{A} \leq \frac{1}{6}W$$

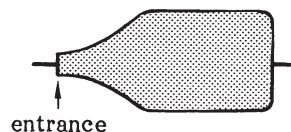


Fig. 6

- (8) Put the unit into the PLAY mode. Check that the tape-to-head contact meets the required specification.
  - (9) Tighten the setscrews of each tape guide, and check again.
  - (10) Restore the DIP switch setting as described in preparation steps (1) and (2).
- . When the tracking at the drum exit side is not good.
- (1) Turn the adjusting nuts of TG-3 and TG-4, and make clearances at (a) of TG-3, (b) of TG-4, and (a) and (b) of the Tape Threading Guide as shown in Fig. 7.
  - (2) Turn the adjusting nut of TG-4 so that the RF waveform envelope changes from state (i) to state (ii) shown in Fig. 8. Check that the tape does not in contact with the guide flange at the (a) portion of TG-3 or (a) portion of the Tape Threading Guide.
  - (3) Turn the adjusting nut of TG-3 so that the tape runs in contact with the guide flange at the (a) portion of TG-3 and the RF waveform envelope flattens. The tape curl is acceptable within the range shown in Fig. 5.
  - (4) Turn the adjusting nut of the Tape Threading Guide so that the tape runs lightly in contact with the guide flange at the (a) portion.
  - (5) Turn the TRACKING control knob to the FIXED position. Check that the tape-to-head contact meets the required specification.
  - (6) Put the unit into the REV x 1 mode.
  - (7) Check that the RF waveform envelope is flat and the tape-to-head contact meets the required specification.
  - (8) Tighten the setscrews of each tape guide, and check again.
  - (9) Restore the DIP switch setting as described in preparation steps (1) and (2).

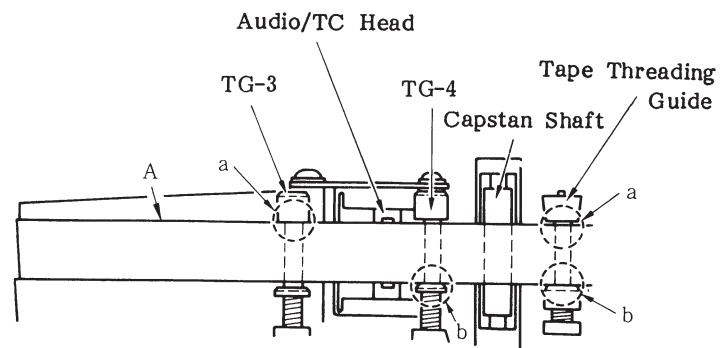
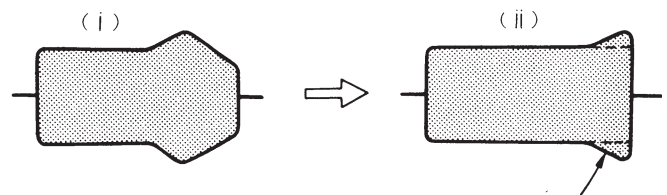


Fig. 7



When tape portion "A" shown in Fig. 7 is pressed down, the waveform should be flat.

Fig. 8

## 8-2. AUDIO/TC HEAD ADJUSTMENT

### 8-2-1. Audio/TC Head Height Adjustment

**Tool:** Alignment tape, CR8-1A

Dual-trace oscilloscope or VTVM

**Mode:** Play back the alignment tape.

**Preparation:**

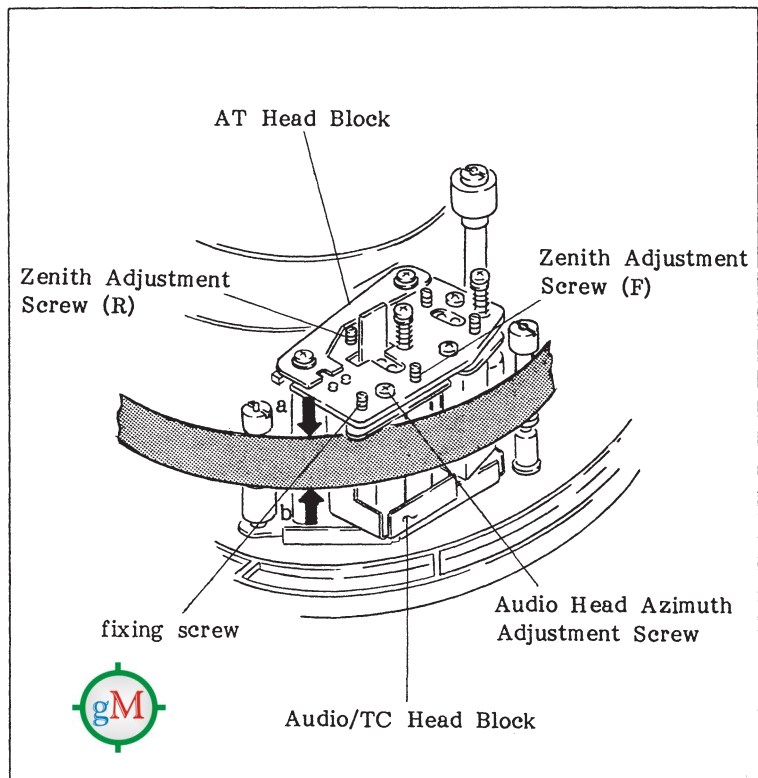
- (1) Check that DIP switch S301 on the AU-76 Board is OFF. (Audio signal is played back in the AT Head.)
- (2) Check that the "DOLBY NR" switch on the Sub Panel is OFF. (The Dolby NR (Noise Reduction) circuit is off.)
- (3) Connect the oscilloscope or VTVM to the AUDIO OUT CH-1 or CH-2.
- (4) Play back the audio 1kHz signal portion on the alignment tape.

**Check procedure:**

- (1) When pressing down the tape at (a) portion, check that the level decreases.
- (2) When pushing up the tape at (b) portion, check that the level decreases.

**Adjustment procedure:**

- . When the level increases while pressing down the tape at (a) portion.
  - (1) Remove the Cleaning Roller Block.
  - (2) Loosen the fixing screw 2 to 3 turns.
  - (3) Turn the Zenith Adjustment Screws (R) and (F) in the counterclockwise direction and turn the Azimuth Height Adjustment Screw an exactly equal amount in the clockwise direction. Adjust for maximum output waveform.
  - (4) Tighten the fixing screw and check again.



- . When the level increases while pushing up the tape at (b) portion.
- (5) Turn the Zenith Adjustment Screws (R) and (F) in the clockwise direction and turn the Azimuth Height Adjustment Screw an exactly equal amount in the counter-clockwise direction. Adjust for maximum output waveform.
- (6) Tighten the fixing screw and check again.
- (7) Perform Section 8-2-2, Audio/TC Head Zenith Adjustment; Section 8-2-3, Audio/TC Head Azimuth Adjustment; Section 8-2-4, Audio/TC Head Phase Adjustment; and Section 8-2-5, Audio/TC Head Position Adjustment.
- (8) Install the Cleaning Roller Block, perform Section 6-9, Cleaning Roller Position Adjustment.

## 8-2-2. Audio/TC Head Zenith Adjustment

**Tool:** Flatness plate

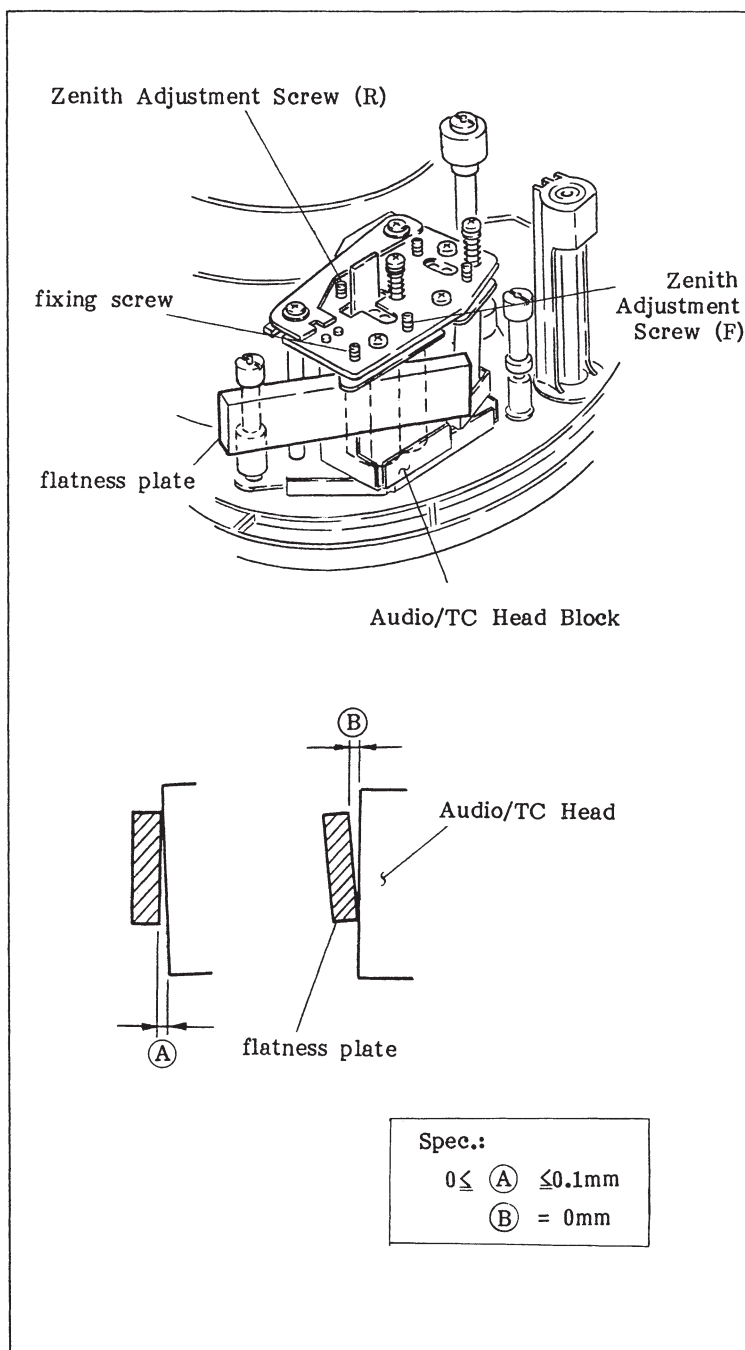
**Mode:** Unthreading end mode

### Check procedure:

- (1) Check that the clearance between the head and the flatness plate meets the required specification when the flatness plate is placed on the Audio/TC Head and TG-3.

### Adjustment procedure:

- . If there is the clearance at the bottom portion.
  - (1) Remove the Cleaning Roller Block.
  - (2) Loosen the fixing screw of the AT Head Block 1/4 to 1 turn.
  - (3) Turn the Zenith Adjustment Screw (R) in the clockwise direction to meet the required specification.
  - (4) Tighten the fixing screw and check again.
- . If there is the clearance at the top portion.
  - (5) Loosen the fixing screw of the AT Head Block 1/4 to 1 turn.
  - (6) Turn the Zenith Adjustment Screw (R) in the counterclockwise direction to meet the required specification.
  - (7) Tighten the fixing screw and check again.
- (8) After adjustment, perform Section 8-2-1, Audio/TC Head Height Adjustment; Section 8-2-3, Audio/TC Head Azimuth Adjustment; Section 8-2-4, Audio/TC Head Phase Adjustment; and Section 8-2-5, Audio/TC Head Position Adjustment.
- (9) Install the Cleaning Roller Block, perform Section 6-9, Cleaning Roller Position Adjustment.



### 8-2-3. Audio/TC Head Azimuth Adjustment

**Tool:** Alignment tape, CR8-1A

Dual-trace oscilloscope or VTVM

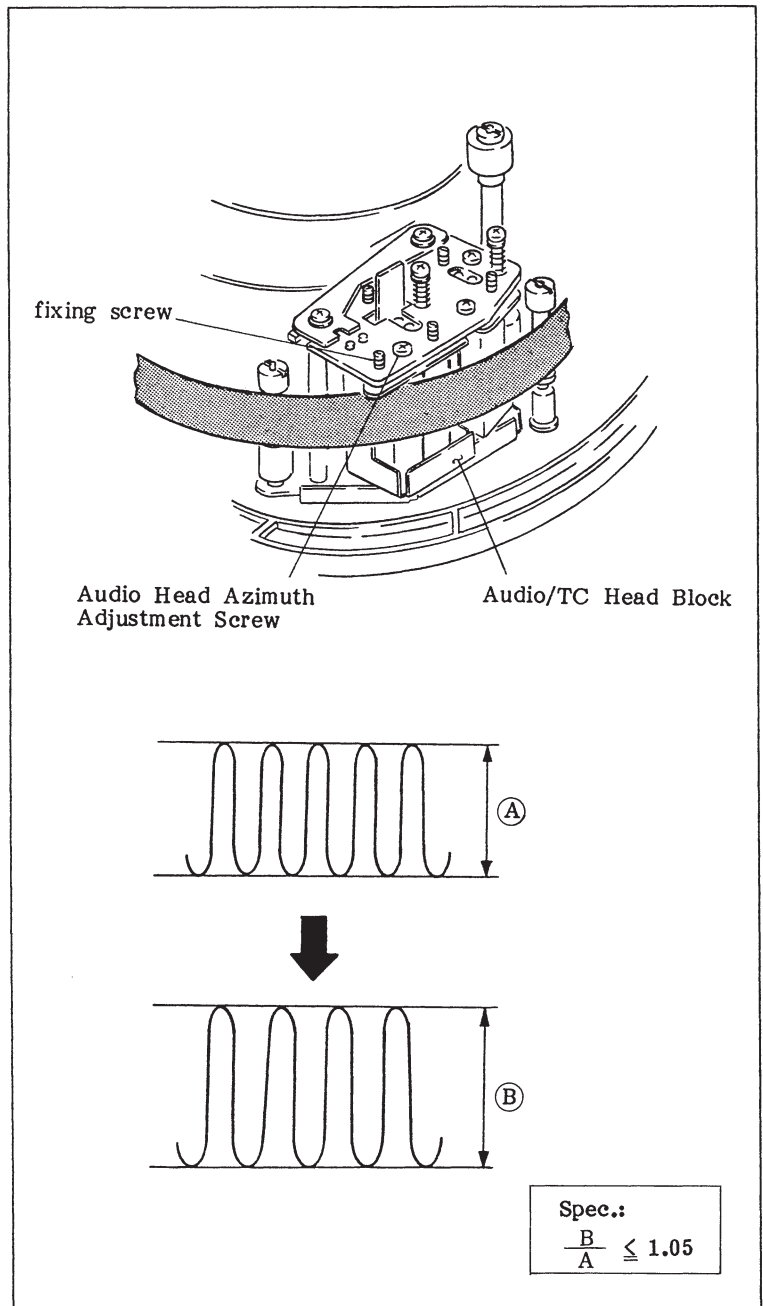
**Mode:** Play back the alignment tape.

**Preparation:**

- (1) Check that DIP switch S301 on the AU-76 Board is OFF. (Audio signal is played back in the AT Head.)
- (2) Check that the "DOLBY NR" switch on the Sub Panel is OFF. (The Dolby NR (Noise Reduction) circuit is off.)
- (3) Connect the oscilloscope to the AUDIO OUT CH-1 or CH-2 terminal.
- (4) Play back the audio 10kHz signal portion on the alignment tape.

**Adjustment procedure:**

- (1) Remove the Cleaning Roller Block.
- (2) Loosen the fixing screw 1 turn.
- (3) Adjust for the maximum output level by turning the Audio Head Azimuth Height Adjustment screw.
- (4) Tighten the fixing screw. When holding down the tape near the drum with a skewer, check that the level change meets the required specification.
- (5) After adjustment, perform Section 8-2-1, Audio/TC Head Height Adjustment; Section 8-2-4, Audio/TC Head Phase Adjustment; and Section 8-2-5, Audio/TC Head Position Adjustment.
- (6) Install the Cleaning Roller Block, perform Section 6-9, Cleaning Roller Position Adjustment.





#### 8-2-4. Audio/TC Head Phase Adjustment

**Tool:** Alignment tape, CR8-1A

Dual-trace oscilloscope

**Mode:** Play back the alignment tape.

**Preparation:**

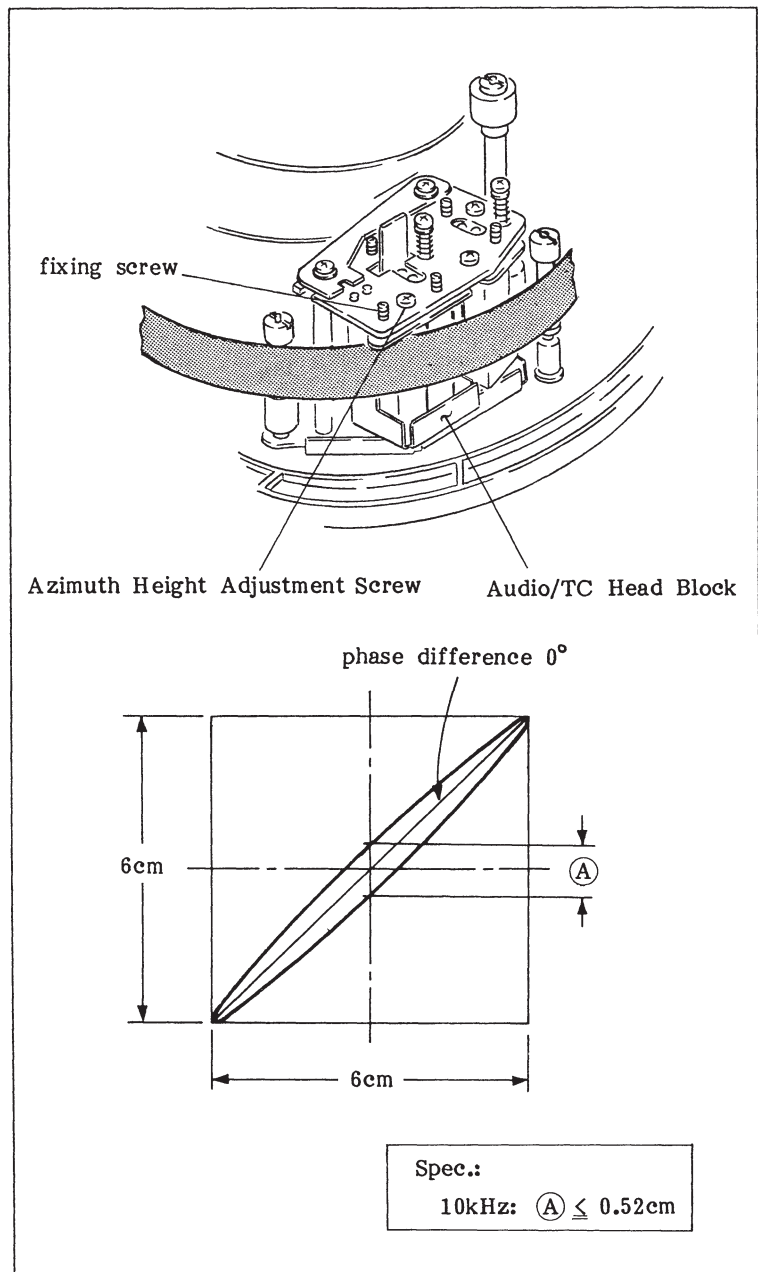
- (1) Check that DIP switch S301 on the AU-76 Board is OFF. (Audio Signal is played back in the AT Head.)
- (2) Check that the "DOLBY NR" switch on the Sub Panel is OFF. (The Dolby NR (Noise Reduction) circuit is off.)
- (3) Connect the horizontal and vertical terminals of the oscilloscope to the AUDIO OUT CH-1 and CH-2 terminals.
- (4) Play back the audio 10kHz portion on the alignment tape.
- (5) Adjust the scope for horizontal and vertical amplitudes for a 6 cm lissajous waveshape.

**Check procedure:**

- (1) Check that the lissajous waveshape meets the required specification at 10kHz.

**Adjustment procedure:**

- (1) Remove the Cleaning Roller Block.
- (2) Loosen the fixing screw 1/4 to 1/2 turn.
- (3) Turn the Azimuth Height Adjustment Screw to meet the required specification.
- (4) Tighten the fixing screw and check again.
- (5) Install the Cleaning Roller Block, perform Section 6-9, Cleaning Roller Position Adjustment.





### 8-2-5. Audio/TC Head Position Adjustment

. It is required that the Section 8-4-3, CTL Head Position Adjustment is checked to be correct before initiating this adjustment.

**Tool:** Alignment tape, CR2-1B  
Dual-trace oscilloscope

**Mode:** Play back the alignment tape.

**Preparation:**

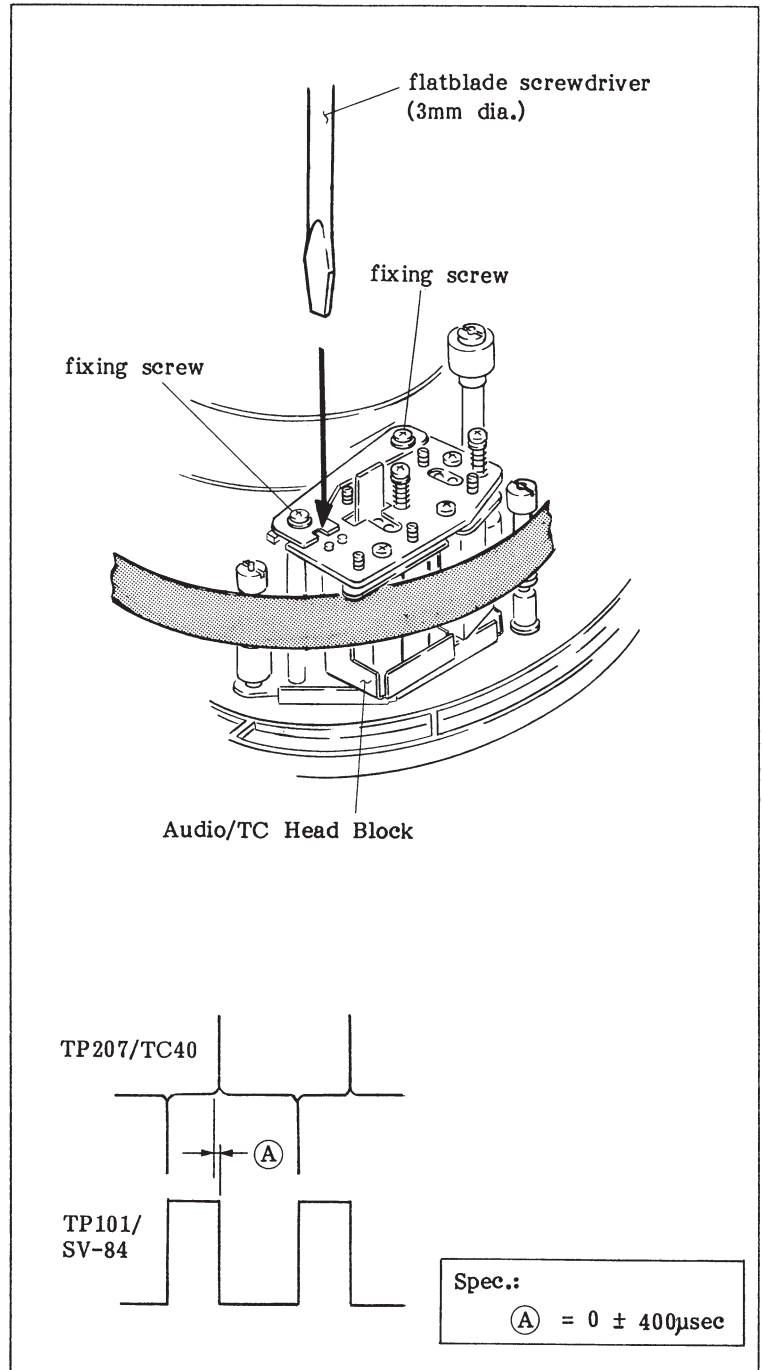
- (1) Connect the oscilloscope as follows:  
CH-1: TP101/SV-84 Board  
CH-2: TP207/TC-40 Board  
TRIG: INTERNAL, CH-1
- (2) Play back the alignment tape.

**Check procedure:**

- (1) Check that the waveform meets the required specification.

**Adjustment procedure:**

- (1) Remove the Cleaning Roller Block.
- (2) Loosen the fixing screws.
- (3) Adjust the position of the head block with a flatblade screwdriver (3 mm dia.) to meet the required specification.
- (4) Tighten the fixing screws, check again.
- (5) Perform Section 8-2-1, Audio/TC Head Height Adjustment; Section 8-2-2, Audio/TC Head Zenith Adjustment; Section 8-2-3, Audio/TC Head Azimuth Adjustment; and Section 8-2-4, Audio/TC Head Phase Adjustment.
- (6) Install the Cleaning Roller Block, perform Section 6-9, Cleaning Roller Position Adjustment.



### 8-3. AUDIO CONFIDENCE HEAD ADJUSTMENT

#### 8-3-1. Audio Confidence Head Height Adjustment

**Tool:** Alignment tape, CR8-1A

Dual-trace oscilloscope or VTVM

**Mode:** Play back the alignment tape.

**Preparation:**

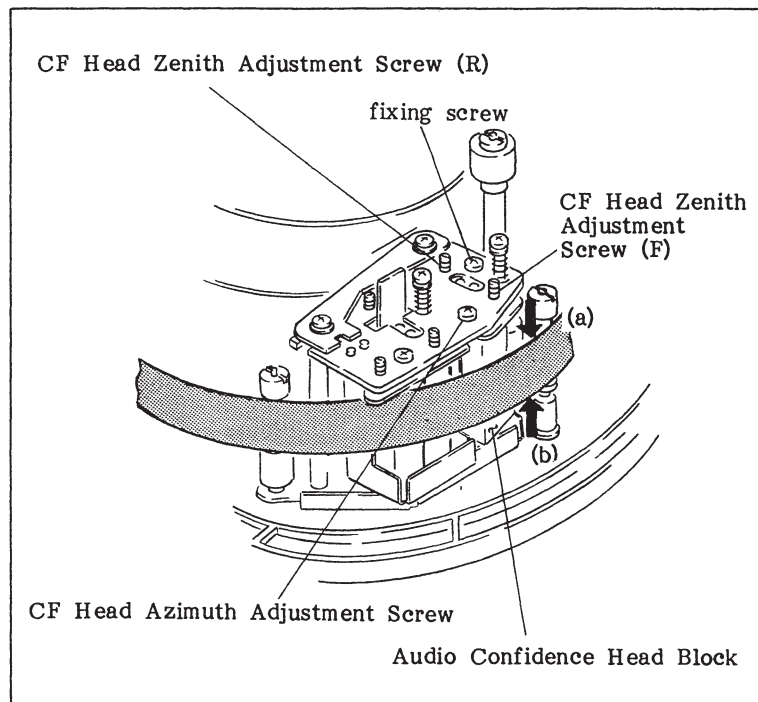
- (1) Turn DIP switch S301 on the AU-76 Board to on. (Audio signal is played back in the CF Head.)
- (2) Check that the "DOLBY NR" switch on the Sub Panel is off. (The Dolby NR (Noise Reduction) circuit is off.)
- (3) Connect the oscilloscope or VTVM to the AUDIO OUT CH-1 or CH-2.
- (4) Play back the audio 1kHz signal portion on the alignment tape.

**Check procedure:**

- (1) When pressing down the tape at (a) portion, check that the level decreases.
- (2) When pushing up the tape at (b) portion, check that the level decreases.

**Adjustment procedure:**

- . When the level increase while pressing down the tape at (a) portion.
- (1) Remove the Cleaning Roller Block.
  - (2) Loosen the fixing screw of the CF Head 2 to 3 turns.
  - (3) Turn the Zenith Adjustment Screws (R) and (F) in the counterclockwise direction and turn the CF Head Azimuth Height Adjustment Screw in the clockwise direction an exactly equal amount. Adjust for maximum output waveform.
  - (4) Tighten the fixing screw and check again.



- . When the level increases while pushing up the tape at (b) portion.
- (5) Turn the CF Head Zenith Adjustment Screws (R) and (F) in the clockwise direction and turn the CF Head Azimuth Height Adjustment Screw in the counter-clockwise direction an exactly equal amount. Adjust for maximum output waveform.
- (6) Tighten the fixing screw and check again.
- (7) Restore the DIP switch setting as described in preparation step (1).
- (8) Perform Section 8-3-2, Audio Confidence Head Zenith Adjustment; Section 8-3-3, Audio Confidence Head Azimuth Adjustment; and Section 8-3-4, Audio Confidence Head Phase Adjustment.
- (9) Install the Cleaning Roller Block, perform Section 6-9, Cleaning Roller Position Adjustment.

### 8-3-2. Audio Confidence Head Zenith Adjustment

**Tool:** Flatness plate

**Mode:** Unthreading end mode

**Check procedure:**

- (1) Check that the clearance between the head and the flatness plate meets the required specification when the flatness plate is placed on the Audio Confidence Head and the TG-4.

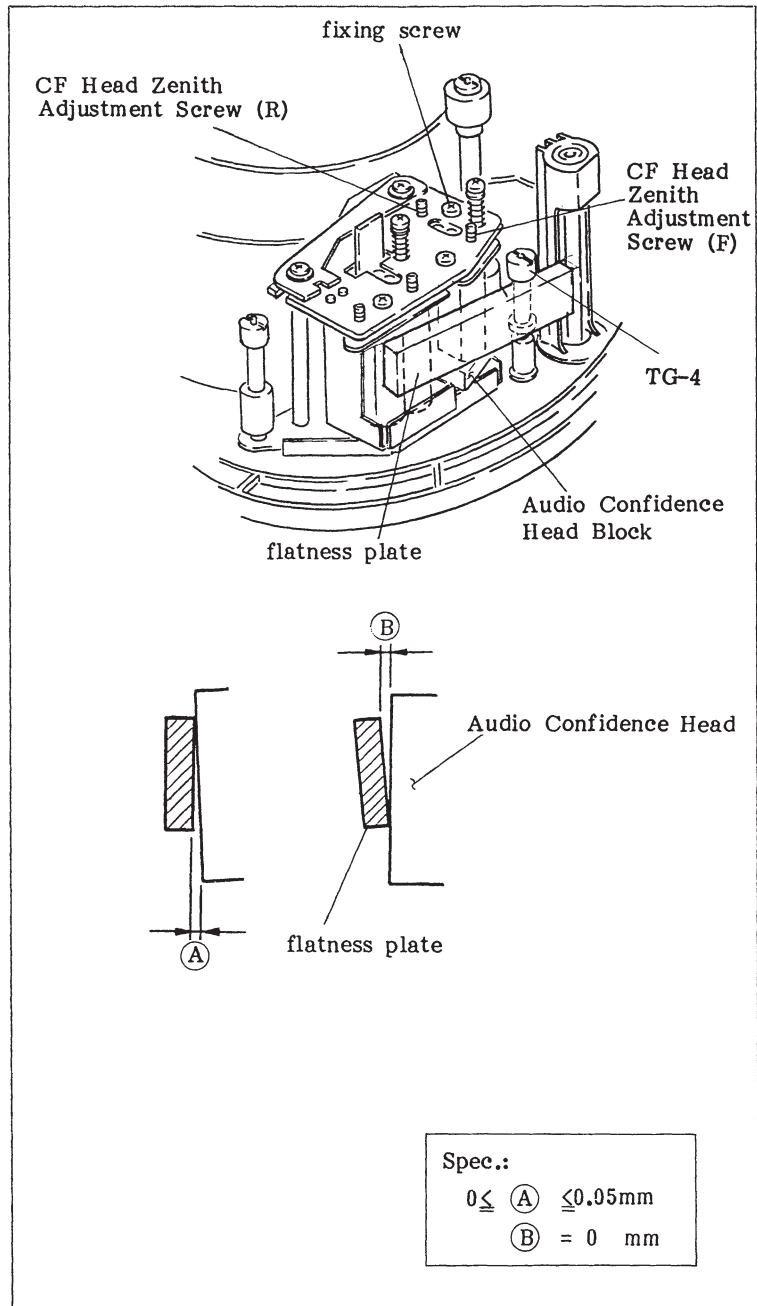
**Adjustment procedure:**

. If there is the clearance at the bottom.

- (1) Remove the Cleaning Roller Block.
- (2) Loosen the fixing screw of the Audio Confidence Head Block 1/4 to 1 turn.
- (3) Turn the CF Head Zenith Adjustment Screw (R) in the clockwise direction to meet the required specification.
- (4) Tighten the fixing screw and check again.

. If there is the clearance at the top.

- (5) Loosen the fixing screw of the Audio Confidence Head Block 1/4 to 1 turn.
- (6) Turn the CF Head Zenith Adjustment Screw (R) in the counterclockwise direction to meet the required specification.
- (7) Tighten the fixing screw and check again.
- (8) After adjustment, perform Section 8-3-1, Audio Confidence Head Height Adjustment; Section 8-3-3, Audio Confidence Head Azimuth Adjustment; and Section 8-3-4, Audio Confidence Head Phase Adjustment.
- (9) Install the Cleaning Roller Block, perform Section 6-9, Cleaning Roller Position Adjustment.



### 8-3-3. Audio Confidence Head Azimuth Adjustment

**Tool:** Alignment tape, CR8-1A

Dual-trace oscilloscope or VTVM

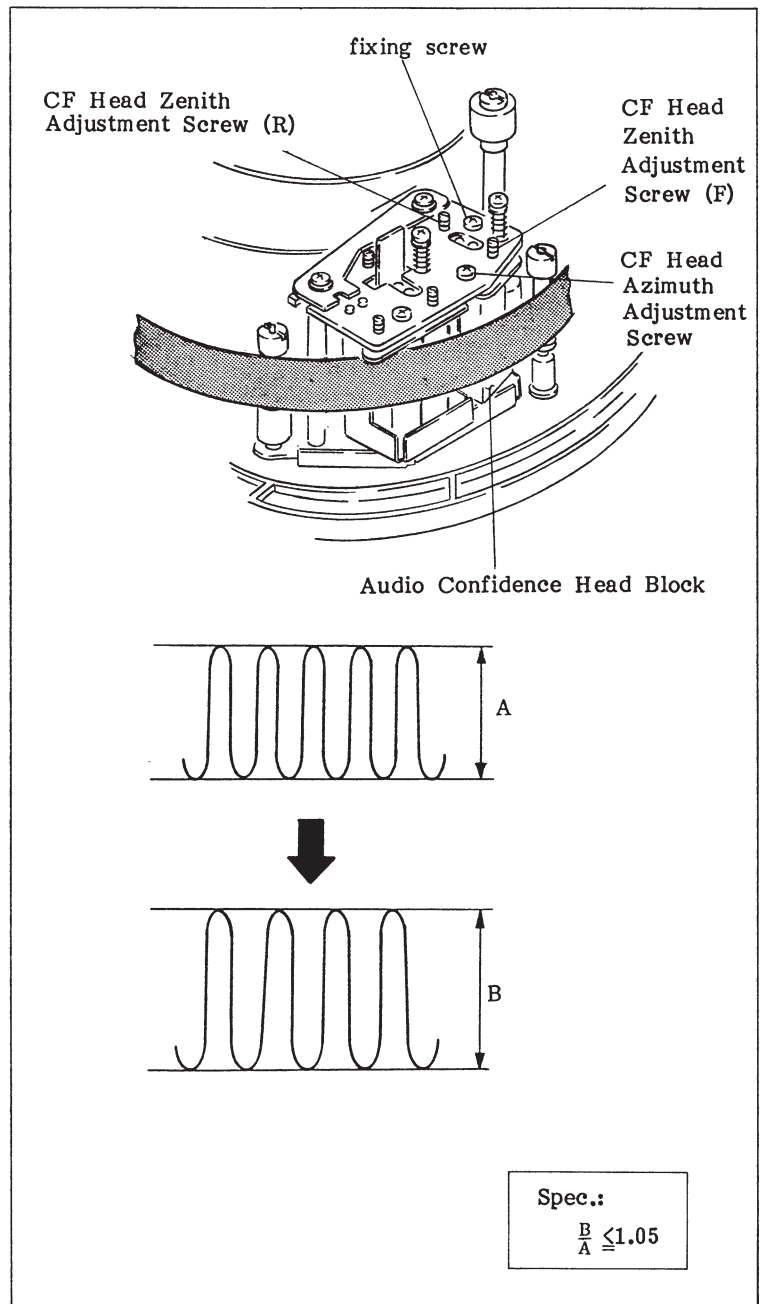
**Mode:** Play back the alignment tape.

**Preparation:**

- (1) Turn DIP switch S301 on the AU-76 Board to on. (Audio signal is played back in the CF Head.)
- (2) Check that the "DOLBY NR" switch on the Sub Panel is off. (Dolby NR (Noise Reduction) circuit is off.)
- (3) Connect the oscilloscope to the AUDIO OUT CH-1 or CH-2 terminal.
- (4) Play back the audio 10kHz signal portion on the alignment tape.

**Adjustment procedure:**

- (1) Remove the Cleaning Roller Block.
- (2) Loosen the fixing screw of the CF Head 1 turn.
- (3) Adjust for the maximum output level by turning the CF Head Azimuth Height Adjustment screws.
- (4) Tighten the fixing screw. When holding down the tape near the drum with a skewer, check that the change of the level meets the required specification.
- (5) After adjustment, restore the DIP switch as described in preparation step (1).
- (6) Perform Section 8-3-4, Audio Confidence Head Phase Adjustment; and Section 8-3-1, Audio Confidence Head Height Adjustment.
- (7) Install the Cleaning Roller Block, Perform Section 6-9, Cleaning Roller Position Adjustment.



#### 8-3-4. Audio Confidence Head Phase Adjustment

**Tool:** Alignment tape, CR8-1A

Dual-trace oscilloscope

**Mode:** Play back the alignment tape.

**Preparation:**

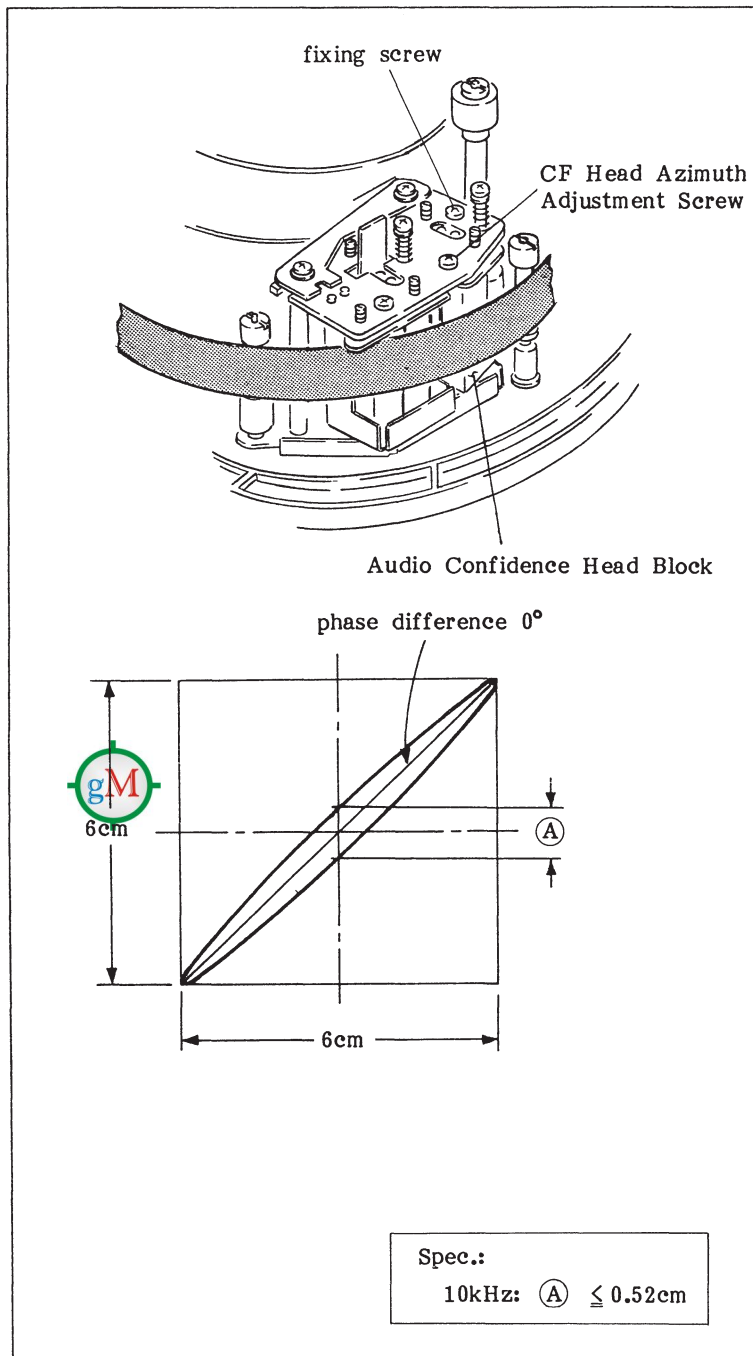
- (1) Turn DIP switch S301 on the AU-76 Board to on. (Audio signal is played back in the CF Head.)
- (2) Check that the "DOLBY NR" switch on the Sub Panel is off. (The Dolby NR (Noise Reduction) circuit is off.)
- (3) Connect the horizontal and vertical terminals of the oscilloscope to the AUDIO OUT CH-1 and CH-2 terminals.
- (4) Play back the audio 10kHz portion on the alignment tape.
- (5) Adjust the scope for horizontal and vertical amplitudes for a 6 cm lissajous waveshape.

**Check procedure:**

- (1) Check that the lissajous waveshape meets the required specification at 10kHz.

**Adjustment procedure:**

- (1) Remove the Cleaning Roller Block.
- (2) Loosen the fixing screw 1/4 to 1/2 turn.
- (3) Turn the CF Head Azimuth Height Adjustment Screw to meet the required specification.
- (4) Tighten the fixing screw and check again.
- (5) Restore the DIP switch setting as described in preparation step (1).
- (6) Install the Cleaning Roller Block, perform Section 6-9, Cleaning Roller Position Adjustment.



## 8-4. CTL HEAD ADJUSTMENT

### 8-4-1. CTL Head Height Adjustment

**Tool:** Alignment tape, CR8-1A  
Oscilloscope

**Mode:** Play back the alignment tape.

**Preparation:**

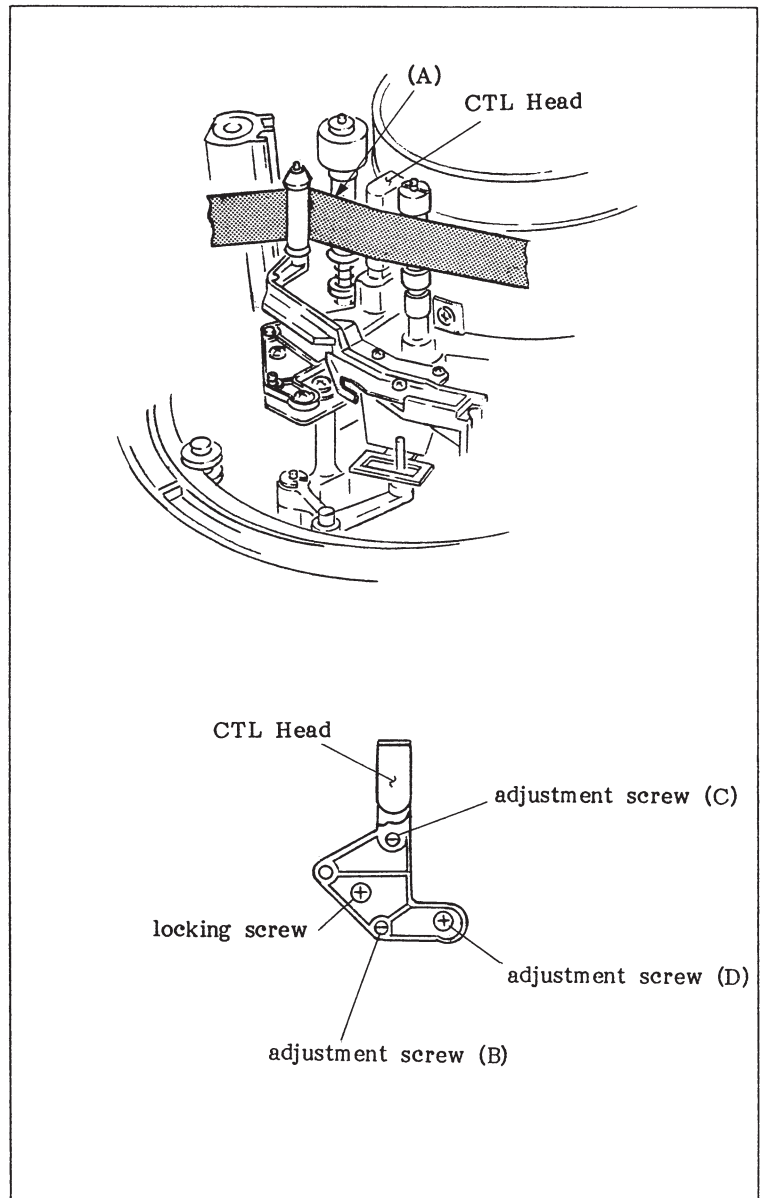
- (1) Remove the SV-84 Board, extend it with an Extension Board.
- (2) Connect the oscilloscope as follows:  
CH-1: TP100/SV-84 Board  
TRIG: INTERNAL, CH-1
- (3) Turn DIP switch S101-bit 3 on the SV-82 Board to on.
- (4) Insert the alignment tape, and play back the audio 1kHz signal portion recorded on the CTL track of the alignment tape.

**Check procedure:**

- (1) Open the RP-29 Boards Block.
- (2) When pressing the tape down and pushing it up at (A) portion, check that both levels decrease. If the levels increase, the following adjustments are required.

**Adjustment procedure:**

- . When the levels increase while pressing down the tape at (A) portion.
  - (1) Loosen the locking screw 1 turn.
  - (2) Turn the adjustment screw (D) in the counterclockwise direction and turn the adjustment screws (C) and (B) in the clockwise direction an exactly equal amount. Adjust for maximum output waveform.
  - (3) Tighten the locking screw and check again.
- . When the levels increase while pushing up the tape at (A) portion.
  - (4) Loosen the locking screw 1 turn.
  - (5) Turn adjustment screw (D) in the clockwise direction and turn the adjustment screws (C) and (B) in the counterclockwise direction an exactly equal amount. Adjust the maximum output waveform.





- (6) Tighten the locking screw and check again.
- (7) After adjustment, perform Section 8-4-2, CTL Head Azimuth/Zenith Adjustment; and Section 8-4-3, CTL Head Position Adjustment.
- (8) Turn DIP switch S101-bit 3 on the SV-82 Board to off.

#### 8-4-2. CTL Head Azimuth/Zenith Adjustment

**Tool:** Cassette reference plate (L)

Tension regulator slantness check tool

**Mode:** Threading end mode

**Check procedure:**

- (1) Open the RP-29 Boards Block.
- (2) Install the cassette reference plate (L) into the cassette position.
- (3) Place the tension regulator slantness check tool at the CTL Head as shown in the figure. Check that the slantness of the CTL Head meets the required specification.

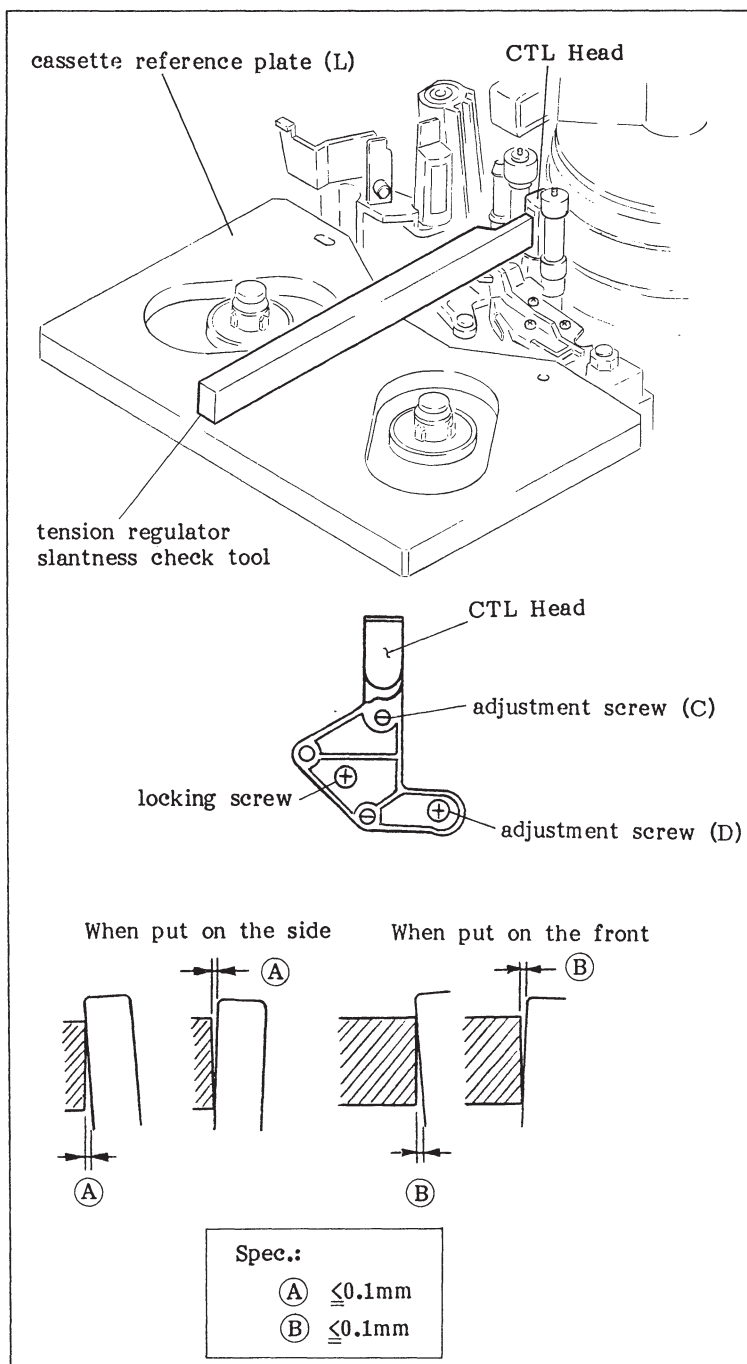
**Adjustment procedure:**

. When the zenith is out of spec.

- (1) Loosen the locking screw 1 turn.
- (2) Adjust the zenith with adjustment screw (C) to meet the required specification.
- (3) Tighten the locking screw and check the azimuth and zenith.

. When the azimuth is out of spec.

- (4) Loosen the locking screw 1 turn.
- (5) Adjust the azimuth with adjustment screw (D) to meet the required specification.
- (6) Tighten the locking screw and check the azimuth and zenith.
- (7) After adjustment, perform Section 8-4-1, CTL Head Height Adjustment; and Section 8-4-3, CTL Head Position Adjustment.





### 8-4-3. CTL Head Position Adjustment

**Tool:** Alignment tape, CR2-1B

Oscilloscope

**Mode:** Play back the alignment tape.

**Preparation:**

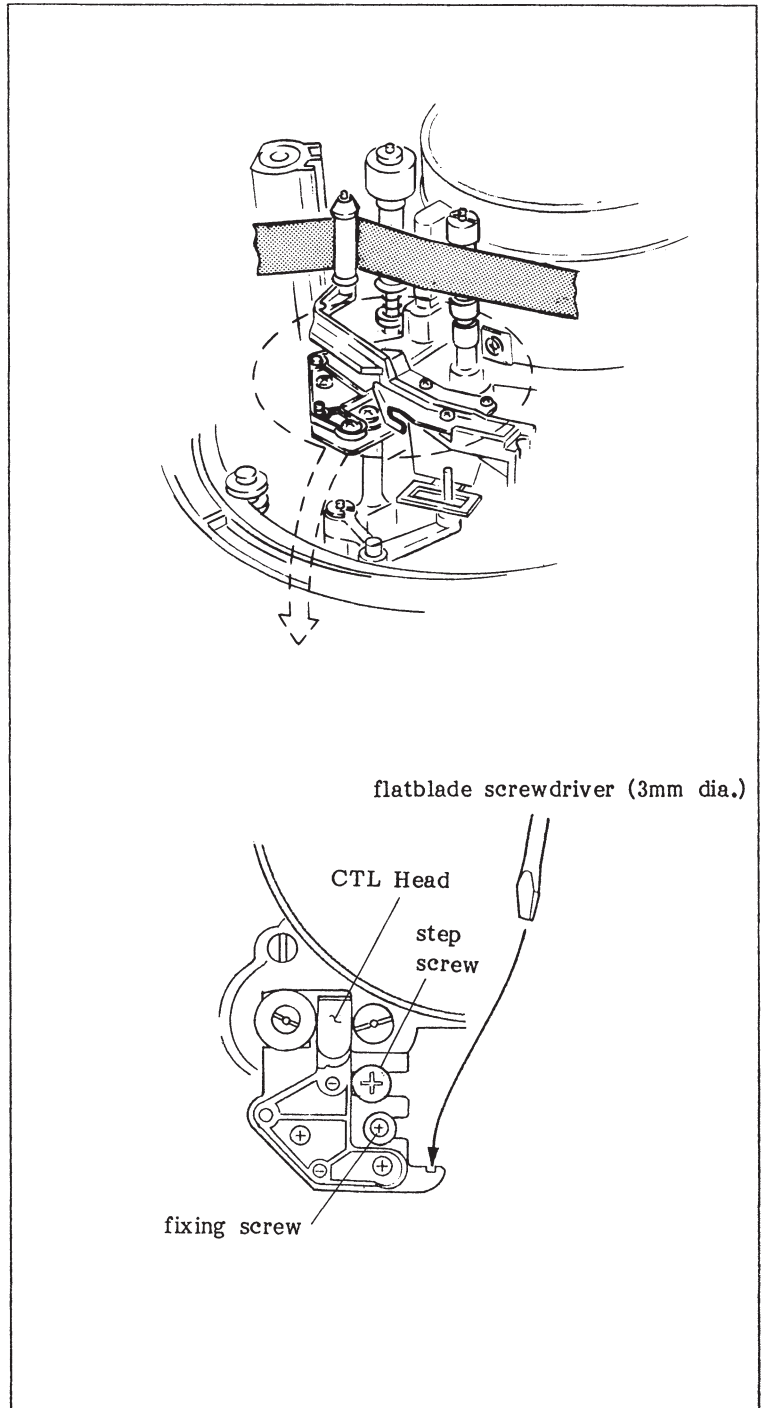
- (1) Turn DIP switch S101-bit4 on the SV-82 Board to "ON". (The phi-square servo circuit is off.)
- (2) Turn DIP switch S1 on the SV-83 Board is on. (The H-LOCK servo circuit is off.)
- (3) Open the RP-29 Boards Block.
- (4) Remove the DM-56 Board, extend it with an Extension Board.
- (5) Connect the oscilloscope as follows:  
CH-1: TP6/DM-56 Board  
EXT. TRIG: TP21/DM-56 Board
- (6) Play back the alignment tape.

**Check procedure:**

- (1) While turning the TRACKING control knob, check that the RF envelope has the maximum amplitude at the FIXED position.

**Adjustment procedure:**

- (1) Loosen the fixing screw 1/4 to 1/2 turn.
- (2) Insert a flatblade screwdriver (3 mm dia.) into the hole of the CTL Head Base. Adjust the position of the CTL Head Block to meet the required specification.
- (3) After adjustment, perform Section 8-2-5, TC Head Position Adjustment.
- (4) Restore the DIP switch setting as described in preparation steps (1) and (2).



## 8-5. T DRAWER GUIDE BLOCK TAPE RUN ADJUSTMENT

### Check procedure:

- (1) Insert the BCT-20M cassette tape and press the PLAY button.
- (2) Check that the tape runs in the tape width direction before and behind a Slantness Guide without uneven tape tension.
- (3) Check that no tape curl occurs on the upper and lower flanges of the T Roller.
- (4) Press the F.FWD button.
- (5) Check that the tape runs and no tape curl occurs as described in procedures (2) and (3).
- (6) Press the REW button.
- (7) Check that the tape runs and no tape curl occurs as described in procedures (2) and (3).

### Adjustment procedure:

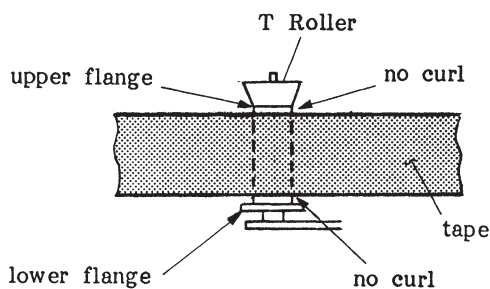
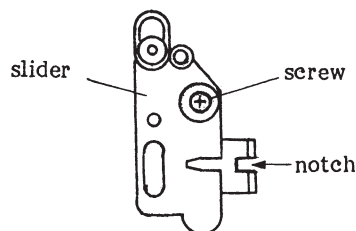
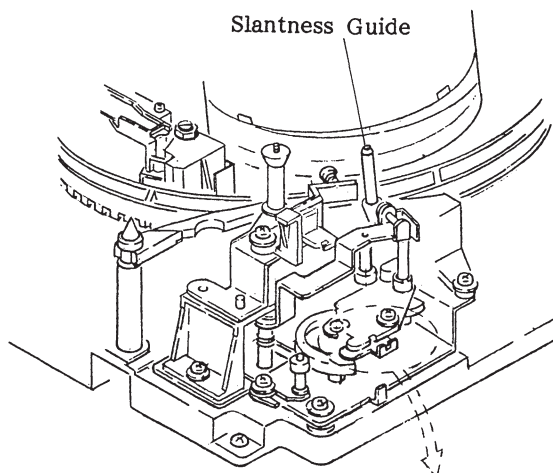
- . When the upper edge of the tape slackens or the tape curl occurs on the upper flange.

- (1) Loosen the fixing screw as shown in the figure.
- (2) Insert the flatblade screwdriver into the notch and turn it moving counterclockwise.

- . When the lower edge of the tape slackens or the tape curl occurs on the lower flange.

- (3) Loosen the fixing screw as shown in the figure.
- (4) Insert the flatblade screwdriver into the notch and turn it moving clockwise.
- (5) After adjustment, tighten the fixing screw and check again.

Note: To prevent a slider from damage, put your fingers under the slider when loosening or tightening the screw. Then, hold the screwdriver's force with your fingers.



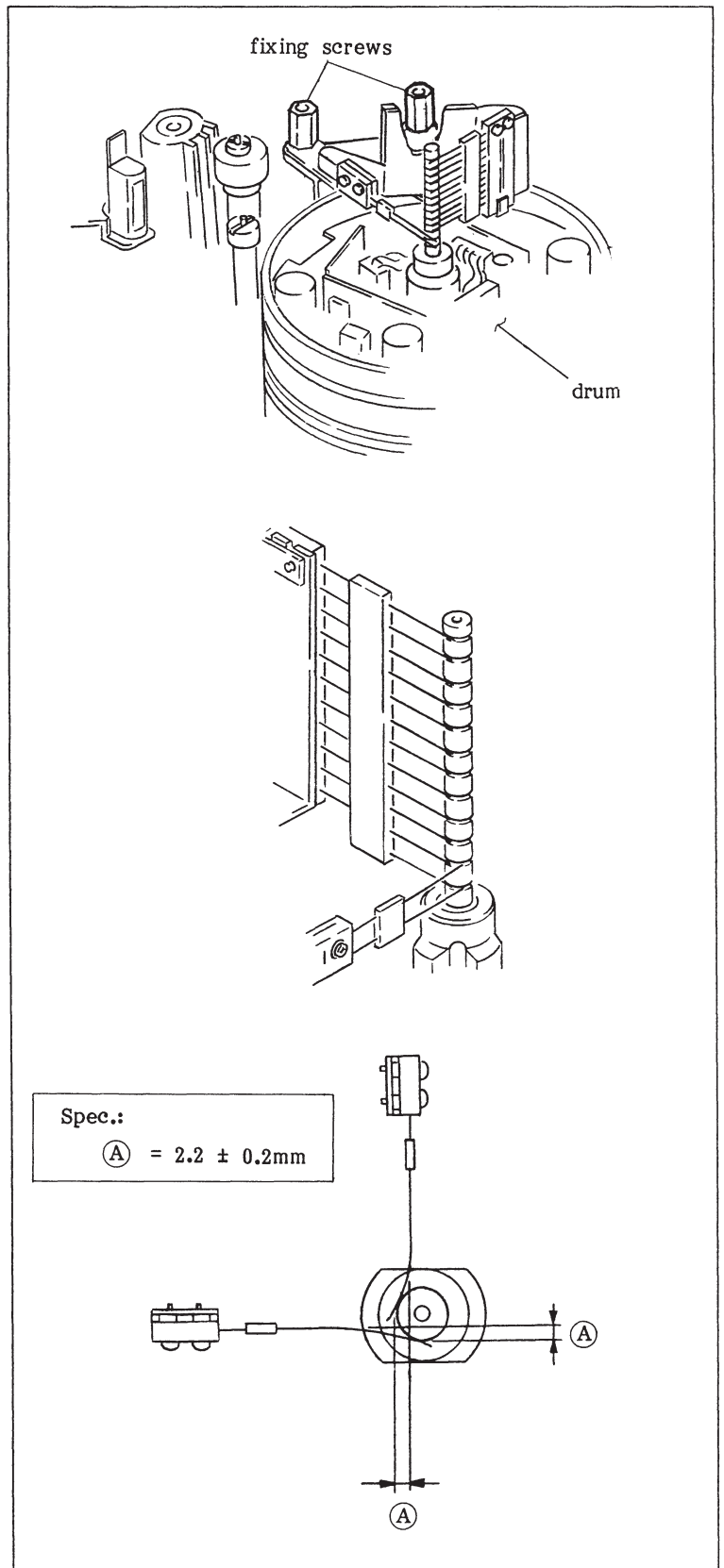
## 8-6. SLIP RING BRUSH POSITION ADJUSTMENT

### Check procedure:

- (1) Check that the position of the brush and ring meets the required specification.
- (2) Check that the brush is in the groove of the ring as shown in the figure.

### Adjustment procedure:

- (1) Remove the Brush Cover.
- (2) Loosen the fixing screws 1/2 to 1 turn.
- (3) Adjust the position of the brush so that it is in the groove of the ring and bending meets the required specification.
- (4) Tighten the fixing screws and check again.
- (5) Install the Brush Cover.



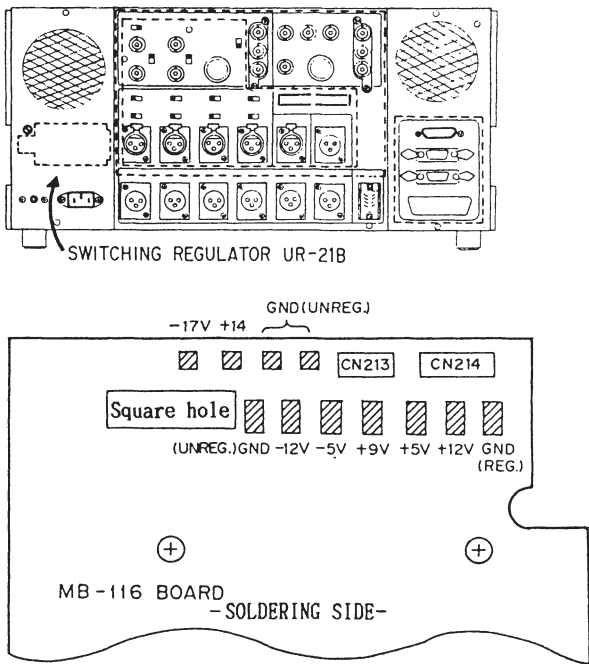


## SECTION 9

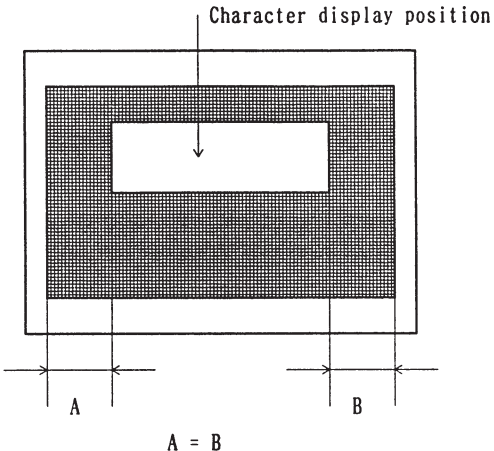
### POWER AND CONTROL SYSTEM ALIGNMENT

#### 9-1. DC VOLTAGE REGULATOR (UR-21B) ADJUSTMENT

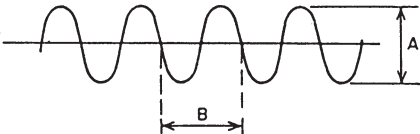
• Serial No. 10001 through 22374

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Remove the power block from the unit. (Refer to Sec. 4-3.)</li> <li>Connect the connectors again.</li> <li>Put the unit up so that the switching regulator is located upward. Then remove the rear cover.</li> <li>Solder a lead wire at the land on the MB-116 board (at the back of the main unit) and connect a digital voltmeter.</li> <li>Turn on the power.</li> <li>Insert a blank tape and put the unit into the REC mode.</li> <li>Using an alignment tool, adjust the voltage from the outside of the switching regulator's outer cabinet.</li> </ul>	<p>Connector Panel</p> 	
	<ul style="list-style-type: none"> <li>+12V adjustment Between +12V regulator and GND land/MB-116 <math>+12.1 \pm 0.1\text{Vdc}</math></li> </ul>	<p>Switching regulator RV51/UR-21B-C2 (+12V ADJ)</p>
	<ul style="list-style-type: none"> <li>-12V adjustment Between -12V regulator and GND land/MB-116 <math>-12.1 \pm 0.1\text{Vdc}</math></li> </ul>	<p>Switching regulator RV251/UR-21B-M2 (-12V ADJ)</p>
	<ul style="list-style-type: none"> <li>+5V adjustment Between +5V regulator and GND land/MB-116 <math>+5.1 \pm 0.1\text{Vdc}</math></li> </ul>	<p>Switching regulator RV51/UR-21B-C1 (+5V ADJ)</p>
	<ul style="list-style-type: none"> <li>-5V adjustment Between -5V regulator and GND land/MB-116 <math>-5.1 \pm 0.1\text{Vdc}</math></li> </ul>	<p>Switching regulator RV201/UR-21B-M1 (-5V ADJ)</p>
<ul style="list-style-type: none"> <li>After adjustment is completed, install the switching regulator and power panel.</li> </ul>		

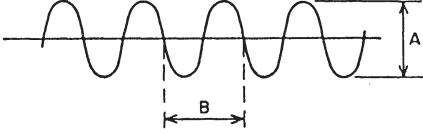
## 9-2. VIDEO OUT-3 CHARACTER POSITION ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• INPUT SELECT SW: COMPOSITE</li> <li>• Set S101 (CHARACTER switch) on the SY-61 board to ON and press S103 (SETUP MENU switch) on the SY-61 board.</li> </ul>		POSITION ●CV102/SY-61(C-7)
<ul style="list-style-type: none"> <li>• Press S103 on the SY-61 board again.</li> </ul>		H SIZE ●CV101/SY-61(C-7)

## 9-3. TAPE BEGINNING SENSOR OSCILLATION LEVEL CHECK

machine conditions for adjustment	specifications	adjustments
Step 1 <ul style="list-style-type: none"> <li>• MODE: STOP</li> <li>• Minimize the center fluctuation in the oscilloscope's TRIG level.</li> <li>• Check that the waveform satisfies specification 1.</li> </ul> Step 2 <ul style="list-style-type: none"> <li>• Place the tape beginning sensor near a screwdriver.</li> </ul> Check that specification 2 is satisfied.	TP402/SY-64(I-7)  Spec 1 ; A=200mVp-p or more B=5 ± 1 μsec Spec 2 ; After muting, check that the mode is selected into FF.	TRIG: INT

#### 9-4. TAPE END SENSOR OSCILLATION LEVEL CHECK

machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• MODE: STOP</li> <li>• Minimize the center fluctuation in the oscilloscope's TRIG level.</li> <li>• Check that the waveform satisfies specification 1.</li> </ul> <p>Step 2</p> <ul style="list-style-type: none"> <li>• Place the tape beginning sensor near a screwdriver.</li> </ul> <p>Check that specification 2 is satisfied.</p>	<p>TP404/SY-64(I-6)</p>  <p>Spec 1 ; A=200mVp-p or more B=3.3 ± 1.0 μsec</p> <p>Spec 2 ; After muting, check that the mode is selected into REW.</p>	<p>TRIG: INT</p>





## SECTION 10

### SERVO SYSTEM ALIGNMENT

**【Required Equipment】**

- DC voltmeter
- Dual-trace oscilloscope
- Frequency counter
- Shorting clip
- Alignment tape CR2-1B (8-960-096-01) Contents

VIDEO TRACK	AUDIO TRACK	TIME CODE TRACK	CTL TRACK
Y: 6MHz signal C: 5MHz signal	Blank	CTL	CTL

- Alignment tape CR5-2A (8-960-097-44) Contents

TIME min, sec	VIDEO TRACK
0:00	75% Color Bars
3:00	Multi Burst Y: 0.5, 1, 2, 3, 4.1, 4.5 MHz C: 0.2, 0.5, 1, 1.5 MHz
6:00	Bowtie & 12.5T
9:00	Pulse & Bar C: No signal
11:00	Quad Phase
13:00	COMPOSITE Monoscope Video Phase, Diehedral
15:00	

**【Video Signals Required】**

- EIA video signal: This is a video signal provided with a specified sync signal that can be used for both color, and black and white systems.

## 10-1. PREPARATION

- Set the PB/PB/EE switch to PB/EE.

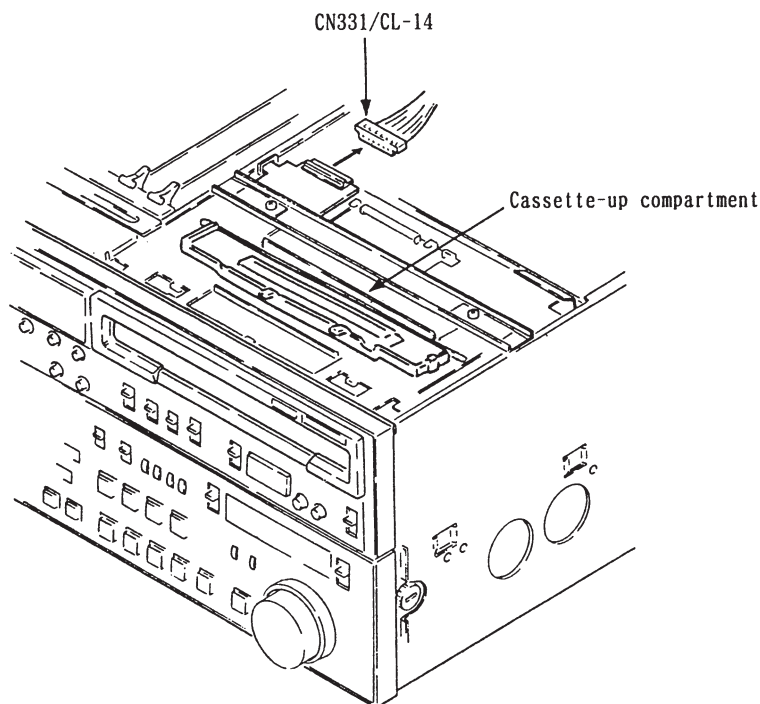
Since the machine may start runaway tape operation when the SV-83 board, reel table, and reel table rotation detecting element (DME) are replaced, the following adjustments should be performed before inserting a cassette tape.

- Section 10-3 Supply Reel FG Duty Cycle Adjustment
- Section 10-4 Take-up Reel FG Duty Cycle Adjustment

When the SV-84 board and head drum are replaced, perform Section 10-9 Drum Free Speed Adjustment.

How to operate the machine without a cassette tape


- Remove CN331 on the CL-14 board and take out the cassette-up compartment.
- Set S101-Bit 1 on the SV-82 board to ON.
- When the STOP button is pressed, the threading ring rotates counterclockwise.



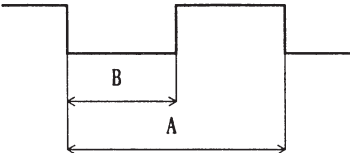
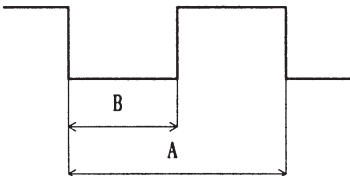
PLAY: Set S106 on the SY-61 board to ON, System Setup Item 902 to 1, and then press the PLAY button.

After adjustment is completed, set S106 to OFF and Item 902 to "0".

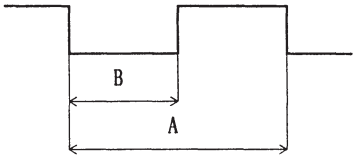
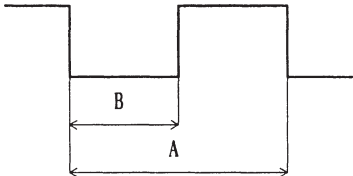
## 10-2. D/A OUTPUT VOLTAGE ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• MODE: STOP</li> </ul>	<p>CH-1: TP103/SV-82(E-5) CH-2: TP101/SV-82(E-4)</p>  <p>A: Make the voltage at TP103 on the SV-82 board same as that at TP101 on the SV-82 board.</p>	<p>RV101/SV-82(E-4)</p> <p>TRIG(+): TP104/SV-82(E-5)</p>

## 10-3. SUPPLY REEL FG DUTY CYCLE ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Put the unit into the PLAY mode without a cassette tape. (Refer to the Preparation in 10-1.)</li> </ul>	<p>TP7/SV-83(D-8)</p>  <p>Duty cycle (B/A) = <math>50 \pm 5\%</math></p>	<p>RV9/SV-83(B-4)</p> <p>TRIG: TP7/SV-83(D-8)</p>
	<p>TP8/SV-83(D-7)</p>  <p>Duty cycle (B/A) = <math>50 \pm 5\%</math></p>	<p>RV10/SV-83(C-4)</p> <p>TRIG: TP8/SV-83(D-7)</p>

#### 10-4. TAKE-UP REEL FG DUTY CYCLE ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Put the unit into the PLAY mode without a cassette tape. (Refer to the Preparation in 10-1.)</li> </ul>	TP9/SV-83(D-8)  Duty cycle (B/A) = $50 \pm 5\%$	⚙RV11/SV-83(B-4)  TRIG: TP9/SV-83(D-8)
	TP10/SV-83(D-8)  Duty cycle (B/A) = $50 \pm 5\%$	⚙RV12/SV-83(A-4)  TRIG: TP10/SV-83(D-8)

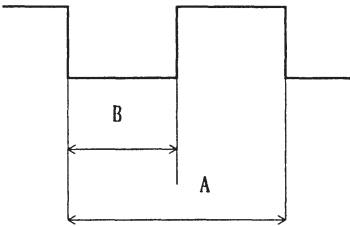
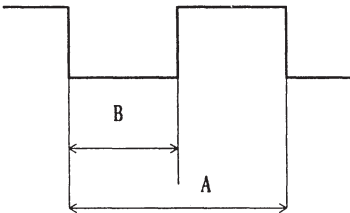
#### 10-5. TENSION SENSOR IMPRESSED VOLTAGE ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Make adjustments only after the power has been ON for 30 seconds or more.</li> <li>MODE: EJECT</li> </ul>	TP1/SV-83(A-8)  +9.0 $\pm$ 0.1 Vdc	⚙RV1/SV-83(B-7)

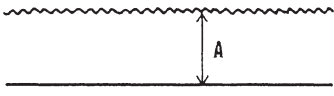
#### 10-6. TENSION SENSOR AMP OFFSET ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Using a shorting clip, short between TP4 on the SV-83 board and TP5 on the SV-83 board.</li> <li>MODE: EJECT</li> <li>After adjustment is completed, remove the shorting clip.</li> </ul>	TP3/SV-83(A-8)  +2.5 $\pm$ 0.04 Vdc	⚙RV2/SV-83(A-8)

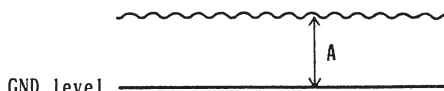
# 10-7. CAPSTAN FG DUTY CYCLE ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a color-bar signal.</li> <li>• CAPSTAN LOCK sw: 2FD</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• Insert the BCT-20M cassette and put the unit into the REC mode.</li> </ul>	TP1/SV-84(C-7)  $B/A = 50 \pm 5\%$	RV2/SV-84(C-6)  TRIG(-): TP1/SV-84(C-7)
	TP2/SV-84(C-7)  $B/A = 50 \pm 5\%$	RV3/SV-84(C-5)  TRIG(-): TP2/SV-83(A-6)

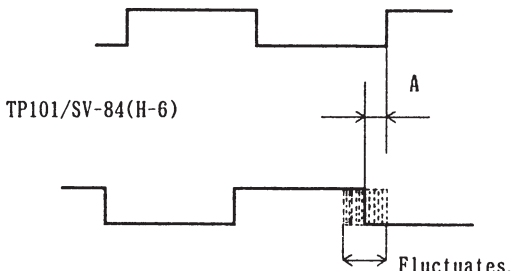
# 10-8. CAPSTAN FREE SPEED ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a color-bar signal.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• Insert the BCT-20M cassette and put the unit into the REC mode.</li> </ul>	TP4/SV-84(F-9)  $A = 2.5 \pm 0.1 \text{ Vdc}$	RV1/SV-84(D-4)

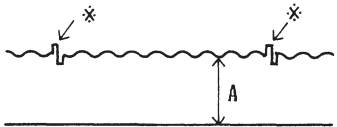
## 10-9. DRUM FREE SPEED ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>REF.VIDEO select switch on the connector panel: EXT.</li> <li>S101-Bit1, 4/SV-82: ON</li> <li>Using a shorting clip, short between TP106 and TP107 on the SV-84 board.</li> <li>Insert the BCT-20M cassette and put the unit into the REC mode.</li> <li>After adjustment is completed, remove the shorting clip. Set S101-Bits 1 and 4 to the former position. Return the REF.VIDEO select switch to AUTO.</li> </ul>	<p>TP105/SV-84(D-8)</p>  <p><math>A = 2.5 \pm 0.1 \text{ Vdc}</math></p>	<p>RV102/SV-84(C-2)</p>

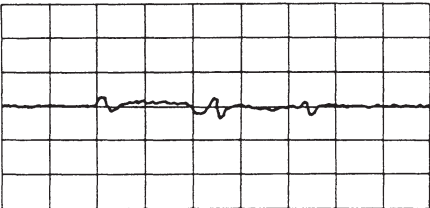
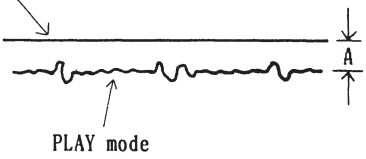
## 10-10. TRACKING CONTROL CENTERING ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Set the TRACKING control to the center click position.</li> <li>Insert alignment tape CR2-1B and put the unit into the PLAY mode.</li> <li>DT SELECT sw: OFF</li> <li>CONF1 sw: OFF</li> </ul>	<p>TP102/SV-84(H-1)</p>  <p>TP101/SV-84(H-6)</p> <p>Note: When the waveform at TP101 fluctuates, measure it in its center.</p> <p><math>A = 0 \pm 0.1 \text{ msec}</math></p>	<p>RV102/SV-82(D-1)</p> <p>TRIG(+): TP102/SV-84(H-1)</p>

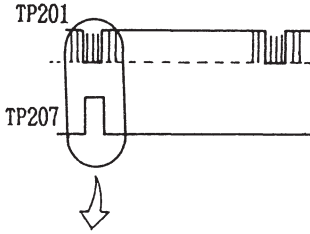
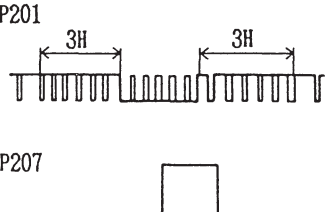
# 10-11. CAPSTAN STOP SERVO BIAS ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Insert alignment tape CR2-1B and put the unit into the SEARCH STILL mode.</li> <li>Repeat FWD-STILL operation several times in the JOG mode. Check where the voltage at TP3 is minimized, then adjust.</li> </ul>	TP3/SV-84(G-4)  $A = 0.3 \pm 0.02 \text{ Vdc}$ (A indicates a mean value in the portion other than marked with *.)	RV103/SV-82(D-1)

# 10-12. INSTANT START ADJUSTMENT

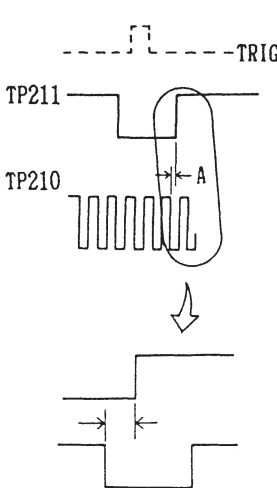
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Set the TRACKING control to the center click position.</li> <li>Insert alignment tape CR2-1B.</li> </ul> Step 1 <ul style="list-style-type: none"> <li>MODE: PLAY</li> </ul>	TP6/SV-84(D-3)  After the servo is locked, adjust the DC voltage level to the horizontal line of the oscilloscope's center position.	
Step 2 <ul style="list-style-type: none"> <li>MODE: STILL</li> </ul>	 $A = 0 \pm 0.2 \text{ Vdc}$	RV4/SV-84(E-5)

# 10-13. SERVO FRAMING ADJUSTMENT

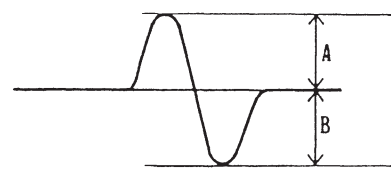
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a color-bar signal to the VIDEO IN and REF VIDEO IN connectors.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• MODE: STOP</li> </ul>	CH-1: TP201/SV-83(C-1) CH-2: TP207/SV-83(E-3)  <ul style="list-style-type: none"> <li>• One pulse should be output at TP207 every two fields.</li> </ul>	RV210/SV-83(E-5)
	 <ul style="list-style-type: none"> <li>• Check that the pulse portion is in the first field.</li> </ul>	TRIG: TP207/SV-83(E-3)



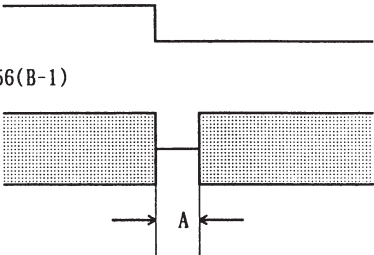
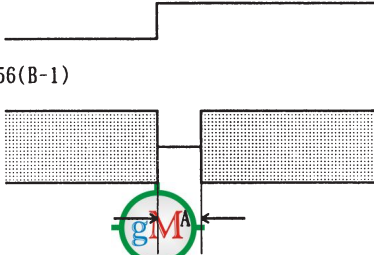
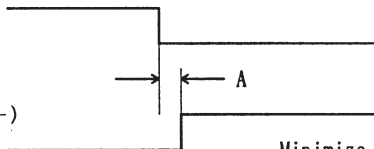
# 10-14. FRAMING PULSE WIDTH ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a color-bar signal to the VIDEO IN and REF VIDEO IN connectors.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• MODE: STQP</li> </ul>	<p>CH-1: TP211/SV-83(E-4) CH-2: TP210/SV-83(E-4)</p>  <p><math>A = 7.5 \pm 0.5 \mu\text{sec}</math></p>	<p>RV210/SV-83(E-5)</p> <p>TRIG: TP207/SV-83(E-3)</p>

# 10-15. CAPSTAN ACCELERATION CORRECTION ADJUSTMENT


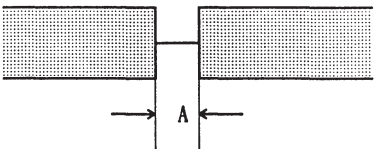
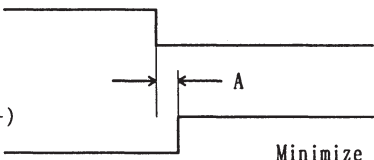
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Insert the BCT-90ML cassette.</li> <li>• Turn the SEARCH dial and select two times normal speed.</li> <li>• Using a DT SELECT switch, select the VAR and SEARCH modes.</li> </ul>	<p>TP3/SV-83(A-8)</p>  <ul style="list-style-type: none"> <li>• Adjust RV8 on the SV-83 board so that A and B are minimum.</li> <li>• A and B should be within 0.15 Vp-p.</li> </ul>	<p>RV8/SV-83(A-4)</p>

# 10-16. R/P HEAD Y SWITCHING POSITION ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• DT SELECT sw: OFF</li> <li>• S101- Bit4/SV-82: ON</li> <li>• S1/SV-83: ON</li> <li>• Insert alignment tape CR2-1B and put the unit into the PLAY mode.</li> <li>• Set the TRACKING control to the center click position.</li> </ul>	<p>TP26/DM-56(B-1)</p>  <p>Minimize A. (10 <math>\mu</math>sec or less)</p>	<p>RV201/SV-83(D-2)</p> <p>TRIG (+): TP26/DM-56(B-1)</p>
	<p>TP26/DM-56(B-1)</p>  <p>Minimize A. (10 <math>\mu</math>sec or less)</p>	<p>RV202/SV-83(D-2)</p> <p>TRIG (-): TP26/DM-56(B-1)</p>
	<p>TP26/DM-56(B-1)</p> <p>TRIG(+)</p>  <p>Minimize A. (5 <math>\mu</math>sec or less)</p> <p>Select the TRIG SLOPE (+/-) and check that the phase difference satisfies the specification.</p>	<ul style="list-style-type: none"> <li>• Fine adjust</li> <li>RV201/SV-83(D-2)</li> <li>RV202/SV-83(D-2)</li> </ul> <p>TRIG: TP26/DM-56(B-1)</p>

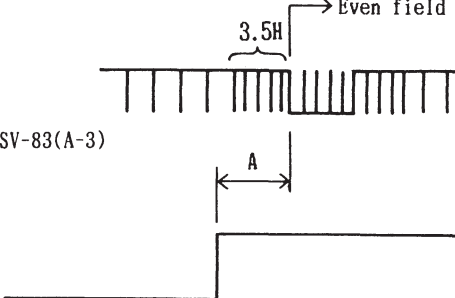
• After adjustment is completed, set S101-Bit4 on the SV-82 board and S1 on the SV-83 board to the former position.

# 10-17. R/P HEAD C SWITCHING POSITION ADJUSTMENT

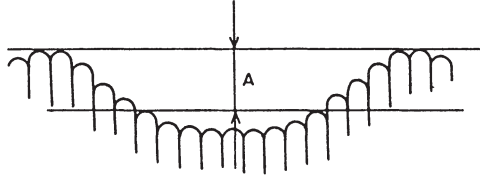
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• DT SELECT sw: OFF</li> <li>• S101- Bit4/SV-82: ON</li> <li>• S1/SV-83: ON</li> <li>• Insert alignment tape CR2-1B and put the unit into the PLAY mode.</li> <li>• Set the TRACKING control to the center click position.</li> </ul>	TP317/DM-56(F-1)  TP321/DM-56(F-1)  Minimize A. Spec 1 (10 $\mu$ sec or less)	<ul style="list-style-type: none"> <li>• RV206/SV-83(B-3)</li> </ul> TRIG (+): TP317/DM-56(F-1)
	TP317/DM-56P(F-1) TRIG(+)  TRIG(-) Minimize A. (5 $\mu$ sec or less) Select the TRIG SLOPE (+/-) and check that the phase difference satisfies the specification.	<ul style="list-style-type: none"> <li>• Fine adjust</li> <li>• RV206/SV-83(B-3)</li> </ul> TRIG: TP317/DM-56(F-1)

• After adjustment is completed, make Section 10-20-8 DT Y Switching Pulse Position Adjustment.

# 10-18. REC DRUM LOCK PHASE ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• REF.VIDEO select switch: AUTO</li> <li>• Supply a color-bar signal.</li> <li>• S101- Bit4/SV-82: ON</li> <li>• S1/SV-83: ON</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• Insert the BCT-20G and put the unit into the REC mode.</li> <li>• CONF1 sw: OFF</li> <li>• After adjustment is completed, set S101-Bit4 on the SV-82 board and S1 on the SV-83 board to the former position.</li> </ul>	<p>TP201/SV-83(C-1)</p>  <p>TP204/SV-83(A-3)</p> <p><math>A = 2.25 \pm 0.1 H</math></p>	<p>RV202/SV-84(C-1)</p> <p>TRIG: TP201/SV-83(C-1)</p>

# 10-19. PICTURE SPLITTING COMPENSATION ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a monoscope signal on alignment tape CR5-2A.</li> </ul>	<p>CN208-15B/SV-84(E-9)</p>  <p>A; Minimize.</p>	<p>RV100/SV-84(D-1)</p> <p>RV101/SV-84(E-2)</p>

## 10-20. DT SERVO ADJUSTMENT

Before performing the DT Servo Adjustment, make Section 12-5 DM-56 Board Adjustment.

Set the switches as follows:

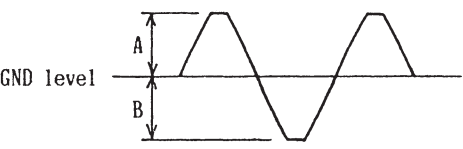
S201/DT-13: All OFF

S1/DT-14: OFF

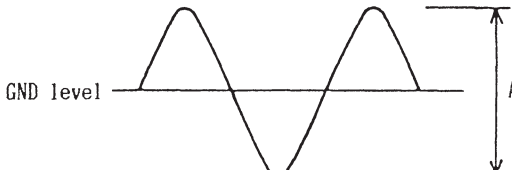
S101/SV-82: All OFF

S1/SV-83: OFF

### 10-20-1. Drive Waveform Limiter Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Remove the slip ring connector (CN661).</li> <li>Fully turn RV205 and RV206 on the DT-13 board counterclockwise.</li> <li>Turn ON S201-Bit2 on the DT-13 board. Then, press S202 on the DT-13 board (D305 lights up). Adjust RV2 during D305 lights up.</li> <li>After adjustment is completed, set S201-Bit2 on the DT-13 board and connector CN661 of the slip ring to the former position.</li> </ul>	<p>CH-1: TP10/DT-15(A-1) } CHOP mode CH-2: TP8/DT-15(A-1) }</p>  <p><math>A = +200 \pm \frac{5}{100} V_{p-p}</math> <math>B = -200 \pm \frac{5}{100} V_{p-p}</math></p>	<p>RV2/DT-15(A-2)</p> <p>TRIG: TP10/DT-15(A-1)</p>


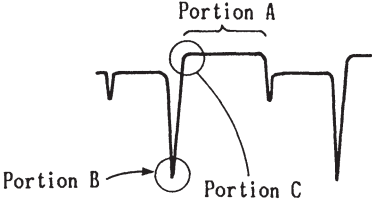
### 10-20-2. Distortion/Erasure Waveform Tentative Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Remove connector CN661 of the slip ring.</li> <li>Turn ON S201-Bit2 on the DT-13 board. Then, press S202 on the DT-13 board (D305 lights up). Adjust RV205 and RV206 during D305 lights up.</li> <li>After adjustment is completed, set S201-Bit2 on the DT-13 board to the former position.</li> <li>Insert connector CN661 of the slip ring.</li> </ul>	<p>CH-1: TP10/DT-15(A-1) } CHOP mode CH-2: TP8/DT-15(A-1) }</p>  <p><math>A = 200 \pm 10 V_{p-p}</math></p>	<p>CH-A RV205/DT-13(A-9) CH-B RV206/DT-13(B-9)</p> <p>TRIG: TP10/DT-15(A-1)</p>

10-20-3. Strain Gage/Loop Gain Adjustment (CH-A)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Turn ON S1 on the DT-14 board and S201-Bit1 on the DT-13 board.</li> <li>• Set RV2 and RV3 on the DT-14 board as shown below.</li> </ul> <div> </div> <ul style="list-style-type: none"> <li>• Play back a color-bar signal on alignment tape CR5-1B and put the unit into the JOG mode.</li> <li>• Slowly turn the search dial so that the output at portion B is maximum in the JOG mode.</li> <li>• DT SELECT sw: VAR</li> </ul>	<p>CH-1: TP6/DT-14 (A-6) } ADD mode CH-2: TP5/DT-14(INVERT)(B-5) }</p> <p>Step 1</p> <ul style="list-style-type: none"> <li>• Make portion A horizontal using the CH-2 VARIABLE control of an oscilloscope.</li> </ul> <div> </div>	
<ul style="list-style-type: none"> <li>• After adjustment is completed, set S1 on the DT-14 board and S201-Bit1 on the DT-13 board to the former position.</li> </ul>	<p>Step 2</p> <p>Sharpen the sag level so that no overshoot appear at portion C.</p> <p>Repeat Steps 1 and 2, then check.</p>	<p>RV5/DT-14(B-8)</p> <p>TRIG: TP202/DT-14(D-7)</p>

# 10-20-4. Strain Gage/Loop Gain Adjustment (CH-B)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Turn ON S1 on the DT-14 board and S201-Bit1 on the DT-13 board.</li> <li>• Set RV2 and RV3 on the DT-14 board as shown below.</li> </ul>  <ul style="list-style-type: none"> <li>• Play back a color-bar signal on alignment tape CR5-1B and put the unit into the JOG mode.</li> <li>• Slowly turn the search dial so that the output at portion B is maximum in the JOG mode.</li> <li>• DT SELECT sw: VAR</li> </ul>	<p>CH-1: TP7/DT-14 (A-8) } ADD mode CH-2: TP4/DT-14 (INVERT)(A-3) }</p> <p>Step 1</p> <ul style="list-style-type: none"> <li>• Make horizontal at portion A using the CH-2 VARIABLE control of an oscilloscope.</li> </ul>  <p>Step 2</p> <p>Sharpen the sag level so that no overshoot appear at portion C.</p> <p>Repeat Steps 1 and 2, then check.</p>	<p>RV4/DT-14(B-7)</p> <p>TRIG: TP202/DT-14(D-7)</p>

# 10-20-5. Inclination Correction Gain Adjustment

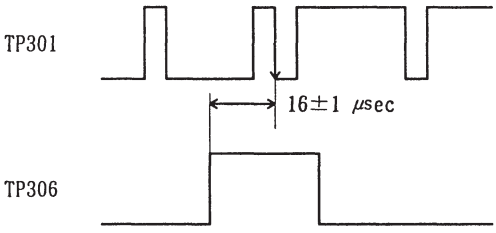
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>DT SELECT sw: VAR</li> <li>Turn ON S1 on the DT-14 board and S201-Bit1 on the DT-13 board.</li> <li>Repeatedly play back a color-bar signal on alignment tape CR5-1B in the REV <math>\times 1</math> and FWD <math>\times 2</math> modes.</li> <li>After adjustment is completed, set S1 on the DT-14 board and S201-Bit1 on the DT-13 board to the former position.</li> </ul>	<p>TP10/DT-14(C-1)</p> <p>TP202 (TRIG)</p>	<p>CH-B</p> <p>RV2/DT-14(A-4)</p> <p>CH-A</p> <p>RV3/DT-14(B-5)</p> <p>TRIG: TP202/DT-14(D-7)</p>

# 10-20-6. Sync Switching Pulse Adjustment

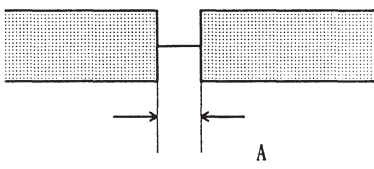
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Turn ON S1 on the DT-14 board and S201-Bit1 on the DT-13 board.</li> <li>Play back a color-bar signal on alignment tape CR5-2A.</li> <li>DT SELECT sw: VAR</li> <li>Extend the DT-14 and SV-83 board with two extension board.</li> <li>After adjustment is completed, set S1 on the DT-14 board and S201-Bit1 on the DT-13 board to the former position.</li> </ul>	<p>CH-1: TP301/DT-14(E-6)</p> <p>CH-2: TP202/DT-14(D-7)</p> <p><math>A = 5 \pm 0.1 H</math></p>	<p>When TRIG SLOPE is +: CH-A</p> <p>RV203/SV-83(D-3)</p> <p>When TRIG SLOPE is -: CH-B</p> <p>RV204/SV-83(D-3)</p> <p>TRIG(+/-):</p> <p>TP202/DT-14(D-7)</p>



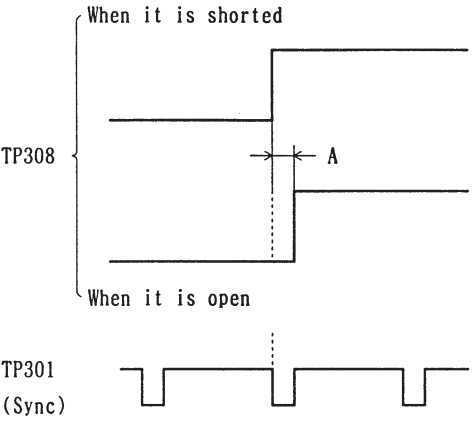
# 10-20-7. DT V Timing Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a color-bar signal on alignment tape CR5-2A.</li> <li>• DT SELECT sw: VAR</li> </ul>	<p>CH-1: TP301/DT-14(E-6) CH-2: TP306/DT-14(D-3)</p>  <p>TP301</p> <p>TP306</p> <p>16 ± 1 μsec</p>	<p>RV304/DT-14(C-4)</p> <p>TRIG: TP306/DT-14(D-3)</p>

# 10-20-8. DT Y Switching Pulse Position Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• DT SELECT sw: VAR</li> <li>• Turn ON S201-Bit1 on the DT-13 board and S1 on the DT-14 board.</li> <li>• Insert alignment tape CR2-1B and put the unit into the PLAY mode.</li> <li>• Using a shorting clip, short between TP11 on the DT-14 board and GND.</li> </ul> <p>After adjustment is completed, set S201-Bit1 on the DT-13 board and S1 on the DT-14 board to the former position. Remove the shorting clip.</p>	<p>TP30/DM-56(B-1)</p>  <p>A</p> <p>A = 20 μsec or less</p> <p>Select the TRIG SLOPE (+/-) of the oscilloscope and check that both channels satisfy the specification.</p>	<p>RV203/DT-14(C-5)</p> <p>TRIG: TP26/DM-56(B-1)</p>

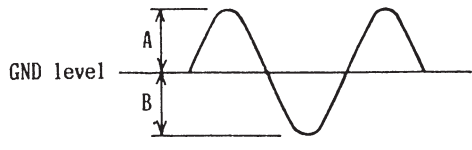
# 10-20-9. Anti-Rolling Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a color-bar signal on alignment tape CR5-2A and put the unit into the STILL mode.</li> <li>• Using a shorting clip, short between TP305(D-3) on the DT-14 board and GND.</li> <li>• DT SELECT sw: VAR</li> </ul>	<p>CH-1: TP308/DT-14(D-5) CH-2: TP301/DT-14(E-6)</p>  <p>When removing the shorting clip, adjust to the same position as when shorting.</p> <p><math>A = 0 \pm 0.5 H</math></p>	<p>RV305/DT-14(D-5)</p> <p>TRIG: TP202/DT-14(D-7)</p>

# 10-20-10. Distortion/Erasure Waveform Offset Adjustment

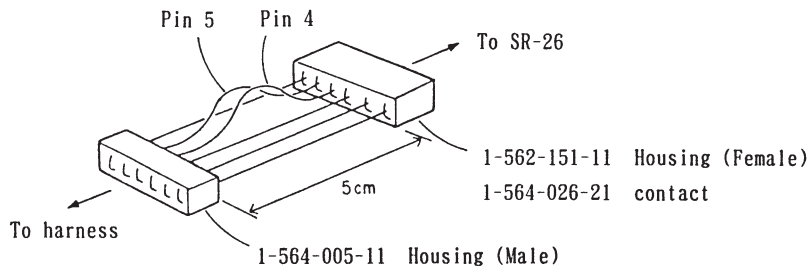
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• MODE: EJECT</li> </ul>	<p>CH-1: TP10/DT-15(A-1) CH-2: TP8/DT-15(A-1)</p> <p>Each DC voltage should be <math>0 \pm 0.5 V_{dc}</math>.</p>	<p>CH-A RV6/DT-14(A-1) CH-B RV7/DT-14(A-1)</p>

# 10-20-11. Distortion/Erasure Waveform Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Turn ON S201-Bit2 on the DT-13 board and press S202 on the DT-13 board.</li> </ul>	<p>CH-1: TP10/DT-15(A-1) CH-2: TP8/DT-15(A-1)</p>  <p><math>A = +190 \pm 5 V_{p-p}</math> <math>B = -190 \pm 5 V_{p-p}</math></p> <p>Note: The voltage should not exceed 400 Vp-p.</p>	<p>CH-A RV205/DT-13(A-9) CH-B RV206/DT-13(B-9)</p> <p>TRIG: TP10/DT-15(A-1)</p>

# 10-21. Rotary Erase Current Adjustment

- For the rotary erase current adjustment, prepare the following extension harnesses for measuring;



machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>VIDEO IN: Color-bar signal</li> <li>INPUT SELECT sw: COMPOSITE</li> <li>Remove connector CN662 on the SR-26 board and connect the above extension harness between CN662 and harness.</li> <li>Connect a current probe to pins 4 and 5 of the extension harness.</li> <li>Insert the BCT-20G cassette and put the unit into the VIDEO INSERT mode.</li> </ul>	<p>4-pin harness/extension harness</p> <p>5-pin harness/extension harness</p> <p><math>A = 250 \pm 4 \text{ mAp-p}</math></p> <p>Frequency(f) = <math>10 \pm 0.5 \text{ MHz}</math></p>	<p>CH-A</p> <p>Current</p> <p>RV1/RE-34(B-1)</p> <p>Frequency</p> <p>LV1/RE-34(B-1)</p> <p>CH-B</p> <p>Current</p> <p>RV2/RE-34(A-1)</p> <p>Frequency</p> <p>LV2/RE-34(A-1)</p>



# SECTION 11

## AUDIO/TIME CODE ALIGNMENT

### 【Equipment Required】

- Audio oscillator
- Audio attenuator
- Vacuum tube voltmeter
- Spectrum analyzer
- Oscilloscope
- Level meter
- Alignment tapes CR8-1A and CR5-1B

### CR8-1A (8-960-097-45) Contents

TIME min, sec	AUDIO TRACK
0:00	1kHz, 0 VU
2:55	Blank
3:00	10kHz, -10 VU
4:55	Blank
5:00	1kHz, -20 VU
5:55	Blank
6:00	40, 7k, 10k, 15kHz
7:55	Blank
8:00	1kHz, 0 VU
10:00	

### CR5-1B (8-960-096-41) Contents

TIME min, sec	VIDEO TRACK	AFM
0:00	RF Sweep	No Signal
2:00		
5:00	60% H Sweep (CTDM)	
8:00	Pulse & Bar (CTDM)	
11:00	Multi Burst	
14:00	Pulse & Bar	400Hz Sine Wave 25kHz Deviation
16:30	75% Color Bars	
17:00		75kHz Deviation
19:00	50% Bowtie & 12.5T	No Signal
22:00	Line 17 Signal	
24:00	Quad Phase	
26:00	Flat Field	
28:00	75% Color Bars with Dropout	
30:00	Composite V Sweep with VISC	

## 【Switch Setting】

### • Function Control Panel

CONF1 switch	: ON
PB, PB/EE switch	: PB/EE
CTL/TC/U-BIT switch	: CTL
DT SELECT switch	: OFF

### • Level Control Panel

AUDIO MONITOR switch	: ST/MIX
AUDIO MONITOR switch	: LNG
AUDIO LIMITER switch	: OFF
AUDIO MIXING switch	: OFF
TRACKING control	: FIXED
REMOTE/LOCAL switch	: LOCAL

### • Subcontrol Panel

AFM INPUT switch	: CH-1/-2
AUDIO MONITOR switch	: ST
DOLBY NR switch	: OFF
TBC control switch	: INT
VIDEO switch	: PRESET
CHROMA switch	: PRESET
SET UP switch	: PRESET
Y/C DELAY switch	: PRESET
HUE switch	: PRESET
TBC BYPASS switch	: OFF
VIDEO INPUT switch	: AUTO
REC INHIBIT switch	: OFF
CAPSTAN LOCK switch	: 2/4FD

### • Connector Panel

REF VIDEO switch	: AUTO
REF VIDEO 75Ω termination	: ON
AUDIO CH-1 LEVEL switch	: HIGH
AUDIO CH-1 600Ω switch	: OFF
AUDIO CH-2 LEVEL switch	: HIGH
AUDIO CH-2 600Ω switch	: OFF
AUDIO CH-3 LEVEL switch	: HIGH
AUDIO CH-3 600Ω switch	: OFF
AUDIO CH-4 LEVEL switch	: HIGH
AUDIO CH-4 600Ω switch	: OFF

## 【Switch Presetting on PC Board 】

### • AU-76 Board

S101-Bit 1, Bit 2	: ON
S101-Bit 3, Bit 4	: OFF
S201-Bit 1, Bit 2	: ON
S201-Bit 3, Bit 4	: OFF
S102-Bit 1	: ON
S102-Bit 2, Bit 3, Bit 4	: OFF
S202-Bit 1	: ON
S202-Bit 2, Bit 3, Bit 4	: OFF

### 【Blank Tape】

The "Blank Tape" described in the adjustment item indicates the tape on which no video and audio signals are recorded.

### 【Audio System Adjustment Procedure 】

For LNG audio system adjustment, make adjustments in the order of Sections 11-1 through 11-33.

For AFM audio system adjustment, make adjustments in the order of Sections 11-34 through 11-46.

### \* Item 900 Series

For setting, refer to the Setup in 1-7-1. To display this item, turn the SEARCH dial while pressing the PLAY button.

Note: Item 900 series are used only at the factory.

Setting should not be thus changed.

When setting is changed, be sure to return it to the initial value.

### 11-1. REC LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Supply a 1kHz signal (4dBs) to the AUDIO IN CH-1/CH-2 connector.</li> <li>MODE: EE</li> </ul>	CH-1: TP103/AU-75(H-1) CH-2: TP203/AU-75(G-1)  $-10 \pm 0.1 \text{ dBs}$	CH-1: RV101/BF-28(A-5) (Panel display: CH-1 REC VR)  CH-2: RV201/BF-28(A-4) (Panel display: CH-2 REC VR)

## 11-2. LINE OUT LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 1kHz signal (4dBs) to the AUDIO IN CH-1/CH-2 connector.</li> <li>• MODE: EE</li> </ul>	CH-1: TP103/AU-76(D-1) CH-2: TP203/AU-76(D-1)  $-10 \pm 0.1 \text{ dBs}$	CH-1: ●RV105/AU-76(C-6)  CH-2: ●RV205/AU-76(C-6)

### 11-3. OUTPUT LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 1kHz signal (4dBs) to the AUDIO IN CH-1/CH-2 connector.</li> <li>• MODE: EE</li> </ul>	<p>AUDIO OUT CH-1 connector (Terminated in 600 ohms.)</p> <p>AUDIO OUT CH-2 connector (Terminated in 600 ohms.)</p> <p>+4 ± 0.1 dBm</p>	<p>CH-1:</p> <p>●RV101/CP-161A(A-1)</p> <p>●RV151/CP-111(B-2)</p> <p>CH-2:</p> <p>●RV201/CP-161A(B-1)</p> <p>●RV251/CP-111(B-1)</p>

#### 11-4. MONITOR OUT LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 1kHz signal (4dBs) to the AUDIO IN CH-3/CH-4 connector.</li> <li>• MODE: EE</li> <li>• Insert the BCT-20M cassette.</li> <li>• Set System Setup Item 103 to 1.</li> <li>• After adjustment is completed, set Item 103 to 0.</li> </ul>	<p>AUDIO OUT CH-1/CH-3 MONITOR connector (Terminated in 600 ohms.)</p> <p>AUDIO OUT CH-2/CH-4 MONITOR connector (Terminated in 600 ohms.)</p> <p>+4 ± 0.1 dBm</p>	<p>CH-1, CH-3: ●RV501/CP-161A(E-1)</p> <p>●RV551/CP-111(F-2)</p> <p>CH-2, CH-4: ●RV601/CP-161A(F-1)</p> <p>●RV651/CP-111(E-1)</p>

## 11-5. LIMITER LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>AUDIO INPUT LEVEL sw: LOW</li> <li>AUDIO LIMITER sw: ON</li> <li>Supply a 1kHz signal (-30dBs) to the AUDIO IN CH-1/CH-2 connector.</li> <li>MODE: EE</li> </ul> <p>• After adjustment is completed, set the AUDIO INPUT LEVEL switch to HIGH and the AUDIO LIMITER switch to OFF.</p>	<p>AUDIO OUT CH-1 connector (Terminated in 600 ohms.) AUDIO OUT CH-2 connector (Terminated in 600 ohms.)</p> <p><math>12 \pm 0.5 \text{ dBm}</math></p>	<p>CH-1: RV107/AU-75(H-9)</p> <p>CH-2: RV207/AU-75(F-9)</p>

## 11-6. DOLBY NR SKEWING ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Supply a <math>1 \pm 0.1 \text{ kHz}</math> signal (-26dBs) to TP101/E101(CH-1) and TP201/E201(CH-2) on the AU-75 board.</li> <li>MODE: EE</li> <li>DOLBY NR sw: ON</li> </ul>	<p>CH-1: TP103/AU-75(H-1) CH-2: TP203/AU-75(G-1)</p> <p><math>-10 \pm 0.1 \text{ dBs}</math></p>	<p>Finely tune using an audio oscillator or attenuator.</p>
<ul style="list-style-type: none"> <li>DOLBY NR sw: ON</li> <li>Supply a <math>17 \pm 0.05 \text{ kHz}</math> signal (-26dBs) to TP101/E101(CH-1) and TP201/E301(CH 2) on the AU-75 board.</li> </ul> <p>• After adjustment is completed, set the DOLBY NR switch to OFF.</p>	<p>CH-1: TP103/AU-75(H-1) CH-2: TP203/AU-75(G-1)</p> <p><math>-18.3 \pm 0.1 \text{ dBs}</math></p>	<p>CH-1: LV101/AU-75(J-5)</p> <p>CH-2: LV201/AU-75(E-5)</p>



# 11-7. R/P HEAD PB FREQUENCY RESPONSE ADJUSTMENT (DOLBY OFF)

machine conditions for adjustment	specifications	adjustments																																																																								
<ul style="list-style-type: none"><li>• DOLBY NR sw: OFF</li><li>• S301/AU-76: OFF</li><li>• Play back 40Hz, 1kHz, 7kHz, 10kHz, and 15kHz signals on alignment tape CR8-1A.</li></ul>	<p>AUDIO OUT CH-1 connector (Terminated in 600 ohms.)</p> <p>AUDIO OUT CH-2 connector (Terminated in 600 ohms.)</p> <table><tr><th>Freq</th><th>Level</th></tr><tr><td>40Hz</td><td>Ref. <math>\pm \frac{2}{3}</math> dB</td></tr><tr><td>1kHz</td><td>Ref.</td></tr><tr><td>7kHz</td><td>Ref. <math>\pm 0.3</math> dB</td></tr><tr><td>10kHz</td><td>Ref. <math>\pm 0.5</math> dB</td></tr><tr><td>15kHz</td><td>Ref. <math>\pm 0.8</math> dB</td></tr></table> <p>If the specification is not satisfied, set the switches as described below, then readjust.</p> <ul style="list-style-type: none"><li>• When the high-frequency level is higher than the specified value. Set and readjust the switches so that the level is lower.</li><li>• When the high-frequency level is lower than the specified value. Set and readjust the switches so that the level is higher.</li></ul> <p>High-frequency level goes low.      High-frequency level goes high.</p> <table><tr><td colspan="12">Preset position</td></tr><tr><td>Bit-1</td><td>0</td><td>1</td><td>0</td><td>1</td><td>0</td><td>1</td><td>0</td><td>1</td><td>0</td><td>1</td><td>1</td></tr><tr><td>Bit-2</td><td>0</td><td>0</td><td>1</td><td>1</td><td>0</td><td>0</td><td>1</td><td>1</td><td>0</td><td>0</td><td>1</td></tr><tr><td>Bit-3</td><td>0</td><td>0</td><td>0</td><td>0</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr><tr><td>Bit-4</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>1</td><td>1</td><td>1</td></tr></table>	Freq	Level	40Hz	Ref. $\pm \frac{2}{3}$ dB	1kHz	Ref.	7kHz	Ref. $\pm 0.3$ dB	10kHz	Ref. $\pm 0.5$ dB	15kHz	Ref. $\pm 0.8$ dB	Preset position												Bit-1	0	1	0	1	0	1	0	1	0	1	1	Bit-2	0	0	1	1	0	0	1	1	0	0	1	Bit-3	0	0	0	0	1	1	1	1	1	1	1	Bit-4	0	0	0	0	0	0	0	0	1	1	1	<ul style="list-style-type: none"><li>• 7kHz adjustment CH-1: RV111/AU-76(E-1) CH-2: RV211/AU-76(F-1)</li><li>• 10kHz, 15kHz adjustment CH-1: RV110/AU-76(D-2) CH-2: RV210/AU-76(E-2)</li></ul> <p>CH-1: S102/AU-76(D-3) CH-2: S202/AU-76(E-3)</p>
Freq	Level																																																																									
40Hz	Ref. $\pm \frac{2}{3}$ dB																																																																									
1kHz	Ref.																																																																									
7kHz	Ref. $\pm 0.3$ dB																																																																									
10kHz	Ref. $\pm 0.5$ dB																																																																									
15kHz	Ref. $\pm 0.8$ dB																																																																									
Preset position																																																																										
Bit-1	0	1	0	1	0	1	0	1	0	1	1																																																															
Bit-2	0	0	1	1	0	0	1	1	0	0	1																																																															
Bit-3	0	0	0	0	1	1	1	1	1	1	1																																																															
Bit-4	0	0	0	0	0	0	0	0	1	1	1																																																															
<p>Note: Setting of S102 and S202 on the AU-76 board should be the same position.</p>																																																																										

11-8. CONF I HEAD PB FREQUENCY RESPONSE TENTATIVE ADJUSTMENT  
(DOLBY OFF)

machine conditions for adjustment	specifications	adjustments																																																																																				
<ul style="list-style-type: none"><li>• DOLBY NR sw: OFF</li><li>• S301/AU-76: ON</li><li>• Play back 40Hz, 1kHz, 7kHz, 10kHz, and 15kHz signals on alignment tape CR8-1A.</li></ul> <p>Note: Setting of S101 and S201 on the AU-76 board should be the same position.</p> <ul style="list-style-type: none"><li>• After adjustment is completed, set S301 on the AU-76 board to OFF.</li></ul>	<p>AUDIO OUT CH-1 connector (Terminated in 600 ohms.) AUDIO OUT CH-2 connector (Terminated in 600 ohms.)</p> <table><tr><th>Freq</th><th>Level</th></tr><tr><td>40Hz</td><td>Ref. <math>\pm 2.5</math>dB</td></tr><tr><td>1kHz</td><td>Ref.</td></tr><tr><td>7kHz</td><td>Ref. <math>\pm 0.5</math>dB</td></tr><tr><td>10kHz</td><td>Ref. <math>\pm 0.5</math>dB</td></tr><tr><td>15kHz</td><td>Ref. <math>\pm 1</math> dB</td></tr></table> <p>If the specification is not satisfied, set the switches as described below, then readjust.</p> <ul style="list-style-type: none"><li>• When the high-frequency level is higher than the specified value. Set and readjust the switches so that the level is lower.</li><li>• When the high-frequency level is lower than the specified value. Set and readjust the switches so that the level is higher.</li></ul> <p>High-frequency level goes low.      High-frequency level goes high.</p> <table><tr><td></td><td colspan="11">Preset position</td></tr><tr><td></td><td colspan="11">↓</td></tr><tr><td>Bit-1</td><td>0</td><td>1</td><td>0</td><td>1</td><td>0</td><td>1</td><td>0</td><td>1</td><td>0</td><td>1</td><td>1</td></tr><tr><td>Bit-2</td><td>0</td><td>0</td><td>1</td><td>1</td><td>0</td><td>0</td><td>1</td><td>1</td><td>0</td><td>0</td><td>1</td></tr><tr><td>Bit-3</td><td>0</td><td>0</td><td>0</td><td>0</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr><tr><td>Bit-4</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>1</td><td>1</td><td>1</td></tr></table>	Freq	Level	40Hz	Ref. $\pm 2.5$ dB	1kHz	Ref.	7kHz	Ref. $\pm 0.5$ dB	10kHz	Ref. $\pm 0.5$ dB	15kHz	Ref. $\pm 1$ dB		Preset position												↓											Bit-1	0	1	0	1	0	1	0	1	0	1	1	Bit-2	0	0	1	1	0	0	1	1	0	0	1	Bit-3	0	0	0	0	1	1	1	1	1	1	1	Bit-4	0	0	0	0	0	0	0	0	1	1	1	<ul style="list-style-type: none"><li>• 7kHz adjustment CH-1: RV102/AU-76(E-8) CH-2: RV202/AU-76(F-7)</li><li>• 10kHz, 15kHz adjustment CH-1: RV101/AU-76(D-8) CH-2: RV201/AU-76(F-8)</li></ul> <p>CH-1: S101/AU-76(D-8) CH-2: S201/AU-76(F-8)</p> <p>0:SW OFF 1:SW ON</p>
Freq	Level																																																																																					
40Hz	Ref. $\pm 2.5$ dB																																																																																					
1kHz	Ref.																																																																																					
7kHz	Ref. $\pm 0.5$ dB																																																																																					
10kHz	Ref. $\pm 0.5$ dB																																																																																					
15kHz	Ref. $\pm 1$ dB																																																																																					
	Preset position																																																																																					
	↓																																																																																					
Bit-1	0	1	0	1	0	1	0	1	0	1	1																																																																											
Bit-2	0	0	1	1	0	0	1	1	0	0	1																																																																											
Bit-3	0	0	0	0	1	1	1	1	1	1	1																																																																											
Bit-4	0	0	0	0	0	0	0	0	1	1	1																																																																											

# 11-9. R/P HEAD PB LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a 1kHz signal on alignment tape CR8-1A.</li> </ul>	CH-1: TP103/AU-75(H-1), E102/AU-75(D-1) CH-2: TP203/AU-75(G-1), E202/AU-75(B-1)  $-10 \pm 0.2 \text{ dBs}$	CH-1: ⌚RV112/AU-76(D-1) CH-2: ⌚RV212/AU-76(F-1)
	AUDIO OUT CH-1 connector (Terminated in 600 ohms.) AUDIO OUT CH-2 connector (Terminated in 600 ohms.)  $4 \pm 0.2 \text{ dBm}$	CH-1: ⌚RV102/BF-28(A-4) (Panel display: CH-1 PB VR) CH-2: ⌚RV202/BF-28(A-3) (Panel display: CH-2 PB VR)

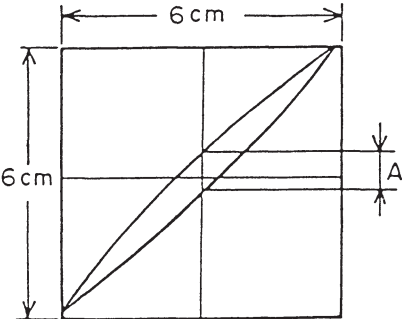
# 11-10. CONF I HEAD PB LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• S301/AU-76: ON</li> <li>• Play back a 1kHz signal on alignment tape CR8-1A.</li> </ul>	CH-1: TP102/AU-76(E-8) CH-2: TP202/AU-76(F-5)  $-10 \pm 0.2 \text{ dBs}$	CH-1: ⌚RV103/AU-76(E-8) CH-2: ⌚RV203/AU-76(F-7)
<ul style="list-style-type: none"> <li>• After adjustment is completed, set S301 on the AU-76 board to OFF.</li> </ul>	AUDIO OUT CH-1 connector (Terminated in 600 ohms.) AUDIO OUT CH-2 connector (Terminated in 600 ohms.)  $4 \pm 0.2 \text{ dBm}$	CH-1: ⌚RV104/AU-76(B-8) CH-2: ⌚RV204/AU-76(B-8)

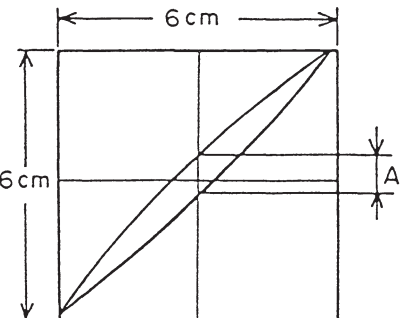
# 11-11. TIME CODE/AUDIO CH-1/2 OSCILLATION FREQUENCY ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Insert the BCT-20G cassette and put the unit into the REC mode.</li> </ul>	TP1/TC-40(B-5)  $82 \pm 1 \text{ kHz}$	⌚RV4/TC-40(B-1)

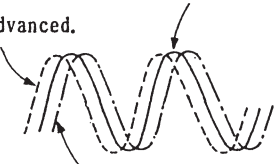
# 11-12. CONF1 HEAD PB PHASE ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>S301/AU-76: ON</li> <li>DOLBY NR sw: OFF</li> <li>Play back a 10kHz signal on alignment tape CR8-1A.</li> <li>Display the lissajous's waveform.</li> </ul> <p>After adjustment is completed, set S301 on the AU-76 board to OFF.</p>	<p>AUDIO OUT CH-1 connector (Terminated in 600 ohms.)</p> <p>AUDIO OUT CH-2 connector (Terminated in 600 ohms.)</p>  <p><math>A \leq 0.5 \text{ cm (Within } \pm 5^\circ \text{)}</math></p>	<p>CH-1:</p> <p>RV115/AU-76(C-7)</p> <p>CH-2:</p> <p>RV215/AU-76(B-7)</p>

# 11-13. R/P HEAD PB PHASE ADJUSTMENT




machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>DOLBY NR sw: OFF</li> <li>Play back a 10kHz signal on alignment tape CR8-1A.</li> <li>Display the lissajous's waveform.</li> </ul>	<p>AUDIO OUT CH-1 connector (Terminated in 600 ohms.)</p> <p>AUDIO OUT CH-2 connector (Terminated in 600 ohms.)</p>  <p><math>A \leq 0.5 \text{ cm (Within } \pm 5^\circ \text{)}</math></p>	<p>CH-1:</p> <p>RV811/AU-75(G-7)</p> <p>CH-2:</p> <p>RV821/AU-75(G-7)</p>







# 11-14. ERASE CURRENT ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<p>Step 1 (CH-1 ERASE)</p>	<p>Voltage: TP3/TC-40(B-5 or C-5)</p> <p>Current: TP6/TC-40(B-6)</p> <p>E401/TC-40(C-5)</p> <p>Current waveform is advanced.</p> <p>Voltage waveform</p>  <p>Current waveform is delayed.</p>	
<ul style="list-style-type: none"> <li>• S1-1: ON, S1-2, S1-3: OFF</li> <li>• S2-1: ON, S2-2, S2-3: OFF</li> <li>• S3-1: ON, S3-2, S3-3: OFF</li> </ul>		<ul style="list-style-type: none"> <li>• For phase advance, turn on the switches below to adjust the waveform. S3-1: ON S3-2 or S3-3: ON S3-2, S3-3: ON</li> <li>• For phase delay, turn on or off the switches below to adjust the waveform. S3-1: OFF S3-2, S3-3: ON S3-2 or S3-3: ON</li> </ul>

Step 2 (CH-2 ERASE)	Voltage: TP2/TC-40(A-5) Current: TP5/TC-40(A-6) E401/TC-40(C-5)	
<ul style="list-style-type: none"> <li>• S1-1: ON, S1-2, S1-3: OFF</li> <li>• S2-1: ON, S2-2, S2-3: OFF</li> <li>• S3-1: ON, S3-2, S3-3: OFF</li> </ul>	Specification same phase.	<ul style="list-style-type: none"> <li>• For phase advance, turn on the switches below to adjust the waveform.                S2-1: ON                S2-2 or S2-3: ON                S2-2, S2-3: ON</li> <li>• For phase delay, turn on or off the switches below to adjust the waveform.                S2-1: OFF                S2-2, S2-3: ON                S2-2 or S2-3:ON</li> </ul>



Step 3 (TC ERASE)	Voltage: TP1/TC-40(A-5) Current: TP4/TC-40(B-6) E401/TC-40(C-5)	
<ul style="list-style-type: none"> <li>• S1-1: ON, S1-2, S1-3: OFF</li> <li>• S2-1: ON, S2-2, S2-3: OFF</li> <li>• S3-1: ON, S3-2, S3-3: OFF</li> </ul>	Specification same phase.	<ul style="list-style-type: none"> <li>• For phase advance, turn on the switches below to adjust the waveform. S1-1: ON S1-2 or S1-3: ON S1-2, S1-3: ON</li> <li>• For phase delay, turn on or off the switches below to adjust the waveform. S1-1: OFF S1-2, S1-3: ON S1-2 or S1-3: ON</li> </ul>
Step 4 (CH-1 ERASE CURRENT) • Insert the blank tape and put the unit into the AUDIO CH-1 INSERT mode.	TP3/TC-40(B-5) E401/TC-40(C-5)        TP6/TC-40(B-5) E401/TC-40(C-5)	<div> <div>No clipping</div>  <div>(NG)</div> </div> <div> <div>No distortion</div>  <div>(NG)</div> </div> <div>  <div>(OK)</div> </div> <div>155mV</div>

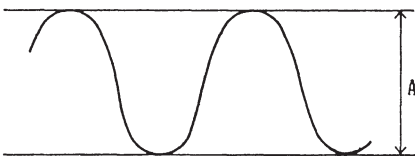
<p>Step 5 (CH-2 ERASE CURRENT)</p> <ul style="list-style-type: none"> <li>Insert the blank tape and put the unit into the AUDIO CH-2 INSERT mode.</li> </ul>	<p>TP2/TC-40(A-5) E401/TC-40(C-5)</p> <p>No clipping</p>  <p>No distortion</p>   <p>TP5/TC-40(A-6) E401/TC-40(C-5)</p> <p>155mV</p>	<p>RV2/TC-40(C-2)</p>
<p>Step 6 (CH-1/CH-2 ERASE CURRENT)</p> <ul style="list-style-type: none"> <li>Insert the blank cassette and put the unit into the AUDIO CH-1/CH-2 INSERT mode.</li> </ul>	<p>Voltage: TP3/TC-40(B-5) TP2/TC-40(A-6) Current: TP6/TC-40(B-5) TP5/TC-40(A-6)</p> <p>No clipping</p>  <p>No distortion</p>  	<p>RV6/TC-40(C-3)</p>
<p>Step 7 (TC ERASE CURRENT)</p> <ul style="list-style-type: none"> <li>Insert the blank tape and put the unit into the REC mode.</li> </ul>	<p>TP4/TC-40(B-6) E401/TC-40(C-5)</p> <p>160 ± 10mV</p> <p>No waveform distortion should appear.</p>	<p>RV3/TC-40(A-1)</p>
<p>Step 8 (FULL ERASE CURRENT)</p> <ul style="list-style-type: none"> <li>Insert the blank tape and put the unit into the REC mode.</li> </ul>	<p>TP7/TC-40(C-4) E1/TC-40(B-6)</p> <p>140 ± 10mV</p> <p>No waveform distortion should appear.</p>	<p>RV5/TC-40(D-5)</p>



# 11-15. BIAS OSCILLATION FREQUENCY ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Insert the blank cassette and put the unit into the REC mode.</li> </ul>	TP302/AU-76(A-4)  $134 \pm 1\text{kHz}$ (for checking) $134 \pm 0.5\text{kHz}$ (for adjustment)	RV301/AU-76(B-4)

# 11-16. BIAS OSCILLATION LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Insert the blank cassette and put the unit into the REC mode.</li> </ul>	TP302/AU-76(A-4)   $A = 16.0 \pm 0.7 \text{ Vp-p}$	RV302/AU-76(A-4)

※ After adjustment is completed, make Section 11-15 Bias Oscillation Frequency Adjustment again.

# 11-17. HEAD TUNING ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Insert the blank cassette and put the unit into the REC mode.</li> <li>Supply no signal.</li> </ul>	CH-1: TP105, TP106(GND)/AU-76(D-3) CH-2: TP205, TP206(GND)/AU-76(E-3)  Maximize the level.	CH-1: RV501/AU-76(B-2) CH-2: RV601/AU-76(A-2)

# 11-18. BIAS TRAP ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>AUDIO INPUT LEVEL sw: HIGH</li> <li>Insert the BCT-20M blank cassette and put the unit into the REC mode.</li> <li>Supply no signal.</li> </ul>	CH-1: TP104/AU-76(G-6) CH-2: TP204/AU-76(G-6)  Minimize the level. (Should be +14.0 dBs or less.)	CH-1: RV103/AU-76(E-3) CH-2: RV203/AU-76(F-3)

# 11-19. CONF1 BIAS TRAP ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Insert the BCT-20M blank cassette and put the unit into the REC mode.</li> <li>• Supply no signal.</li> </ul>	CH-1: TP108/AU-76(E-8) CH-2: TP208/AU-76(F-5)  Minimize the level. (Should be -10.0 dBs or less.)	CH-1: ●LV102/AU-76(D-7) CH-2: ●LV202/AU-76(F-7)

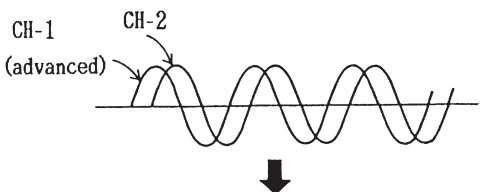
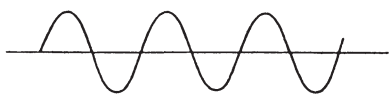
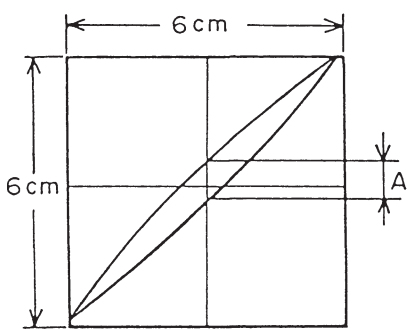
# 11-20. BIAS TRAP ADJUSTMENT (INSERT MODE)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Insert the BCT-20M blank cassette, then press the AUDIO CH-1 INSERT, PLAY, and EDIT buttons. (CH-1 AUDIO INSERT MODE)</li> <li>• Set the AUDIO CH-2 INSERT button to OFF.</li> <li>• Supply no signal.</li> </ul>	TP207/AU-76(F-2)  Minimize the level. (Should be -3.0 dBs or less.)	●LV204/AU-76(F-3)
<ul style="list-style-type: none"> <li>• Press the AUDIO CH-2 INSERT, PLAY, EDIT buttons. (CH-2 AUDIO INSERT MODE)</li> <li>• Set the AUDIO CH-1 INSERT button to OFF.</li> <li>• Supply no signal.</li> </ul>	TP107/AU-76(E-2)  Minimize the level. (Should be -3.0 dBs or less.)	●LV104/AU-76(E-3)

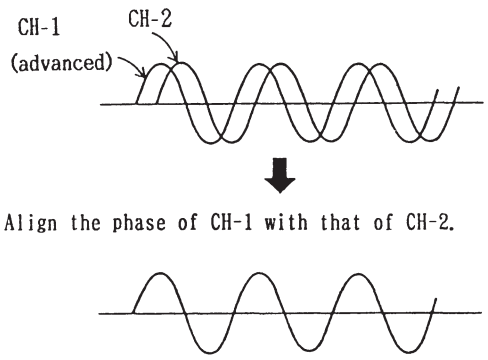
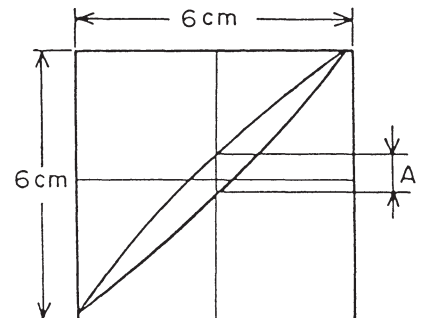
11-21. RECORDING BIAS CURRENT ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
• Insert the BCT-20G blank cassette and put the unit into the REC mode.	TP105, TP106(GND)/AU-76(D-3) TP205, TP206(GND)/AU-76(E-3)  $8.6 \pm 0.1 \text{ mVrms}$	CH-1: ●RV502/AU-76(C-1) CH-2: ●RV602/AU-76(B-1)
• Insert the BCT-20M blank cassette and put the unit into the REC mode.	TP105, TP106(GND)/AU-76(D-3) TP205, TP206(GND)/AU-76(E-3)  CH-1 $16 \pm 0.1 \text{ mVrms}$ CH-2 $16 \pm 0.1 \text{ mVrms}$	CH-1: ●RV501/AU-76(C-1) CH-2: ●RV601/AU-76(B-1)

# 11-22. OXIDE TAPE OVERALL PHASE ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>Fully turn RV103 and RV203 on the AU-75 board counterclockwise.</li> <li>Supply a 15kHz signal(+4dBs) to the AUDIO IN CH-1/2 connector.</li> <li>Insert the BCT-20G blank cassette and put the unit into the REC mode.</li> <li>CONF1 sw: ON</li> </ul>	<p>AUDIO OUT CH-1 connector (Terminated in 600 ohms.) AUDIO OUT CH-2 connector (Terminated in 600 ohms.)</p> <p>Adjust the advanced channel. (for example) Adjust channel 1 so that the both phases are aligned.</p>  <p>Align the phase of CH-1 with that of CH-2.</p> 	<p>CH-1: ●RV103/AU-75(G-2) CH-2: ●RV203/AU-75(E-1)</p>
<p>Step 2</p> <ul style="list-style-type: none"> <li>Play back the recorded tape in Step 1.</li> <li>Display the lissajous's waveform.</li> </ul>	<p>AUDIO OUT CH-1 connector (Terminated in 600 ohms.) AUDIO OUT CH-2 connector (Terminated in 600 ohms.)</p>  <p><math>A \leq 0.5 \text{ cm}</math> (Within <math>\pm 5^\circ</math>)</p> <p>Repeat Steps 1 and 2 until Step 2 is satisfied.</p>	

# 11-23. METAL TAPE OVERALL PHASE ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• Supply a 15kHz signal(+4dBs) to the AUDIO IN CH-1/2 connector.</li> <li>• Insert the BCT-20M cassette and put the unit into the REC mode.</li> <li>• CONF1 sw: ON</li> </ul>	<p>AUDIO OUT CH-1 connector (Terminated in 600 ohms.) AUDIO OUT CH-2 connector (Terminated in 600 ohms.)</p> <p>Adjust the advanced channel. (for example) Adjust channel 1 so that the both phases are aligned.</p>  <p>Align the phase of CH-1 with that of CH-2.</p>	<p>CH-1: ●RV106/AU-75(C-2) CH-2: ●RV206/AU-75(A-2)</p>
<p>Step 2</p> <ul style="list-style-type: none"> <li>• Play back the recorded tape in Step 1.</li> <li>• Display the lissajous's waveform.</li> </ul>	<p>AUDIO OUT CH-1 connector (Terminated in 600 ohms.) AUDIO OUT CH-2 connector (Terminated in 600 ohms.)</p>  <p><math>A \leq 0.5 \text{ cm}</math> (Within <math>\pm 5^\circ</math>)</p> <p>Repeat Steps 1 and 2 until Step 2 is satisfied.</p>	

# 11-24. OXIDE TAPE OVERALL FREQUENCY RESPONSE ADJUSTMENT (DOLBY OFF)

machine conditions for adjustment	specifications	adjustments												
<ul style="list-style-type: none"><li>• DOLBY NR sw: OFF</li><li>• Connect an oscillator to the AUDIO IN CH-1/2 connector.</li><li>• Insert the BCT-20G cassette and put the unit into the REC mode.</li><li>• Set the oscillator frequency level to 40Hz, 1kHz, 7kHz, 10kHz and 15kHz at -16dBs and record each frequency for approx. 10 seconds.</li><li>• Play back the recorded tape.</li></ul>	<p>AUDIO OUT CH-1 connector (Terminated in 600 ohms.)</p> <p>AUDIO OUT CH-2 connector (Terminated in 600 ohms.)</p> <table><tr><th>Freq.</th><th>Level</th></tr><tr><td>40Hz</td><td>0 ± 1.7 dB</td></tr><tr><td>1kHz</td><td>0 (Ref.)</td></tr><tr><td>7kHz</td><td>0 ± 0.5dB</td></tr><tr><td>10kHz</td><td>0 ± 0.5dB</td></tr><tr><td>15kHz</td><td>0 ± 0.7dB</td></tr></table> <p>When the specification is not satisfied, put the unit into the REC mode again and adjust using each variable resistor.</p>	Freq.	Level	40Hz	0 ± 1.7 dB	1kHz	0 (Ref.)	7kHz	0 ± 0.5dB	10kHz	0 ± 0.5dB	15kHz	0 ± 0.7dB	<p>CH-1:</p> <p>RV102/AU-75(G-1)</p> <p>LV102/AU-75(G-2)</p> <p>CH-2:</p> <p>RV202/AU-75(F-1)</p> <p>LV202/AU-75(E-2)</p> <p>• When only 15kHz does not satisfy the level.</p> <p>CH-1:</p> <p>RV502/AU-76(C-1)</p> <p>CH-2:</p> <p>RV602/AU-76(B-1)</p>
Freq.	Level													
40Hz	0 ± 1.7 dB													
1kHz	0 (Ref.)													
7kHz	0 ± 0.5dB													
10kHz	0 ± 0.5dB													
15kHz	0 ± 0.7dB													

- Frequency response adjustment

When the above frequency does not satisfy the specification, adjust using each variable resistor in the REC CONF mode.

# 11-25. METAL TAPE OVERALL FREQUENCY RESPONSE ADJUSTMENT (DOLBY OFF)

machine conditions for adjustment	specifications	adjustments												
<ul style="list-style-type: none"><li>• Set system setup menu ITEM 901 to "1".</li><li>• After adjustment is completed, set system setup menu ITEM 901 to "0".</li><li>• DOLBY NR sw: OFF</li><li>• Connect an oscillator to the AUDIO IN CH-1/2 connector.</li><li>• Insert the BCT-20M cassette and put the unit into the REC mode.</li><li>• Set the oscillator frequency level to 40Hz, 1kHz, 7kHz, 10kHz and 15kHz at -16dBs and record each frequency for approx. 10 seconds.</li><li>• Play back the recorded tape.</li></ul>	<p>AUDIO OUT CH-1 connector (Terminated in 600 ohms.) AUDIO OUT CH-2 connector (Terminated in 600 ohms.)</p> <table><tr><th>Freq.</th><th>Level</th></tr><tr><td>40Hz</td><td>0 ± 1.7dB</td></tr><tr><td>1kHz</td><td>0 (Ref.)</td></tr><tr><td>7kHz</td><td>0 ± 0.5dB</td></tr><tr><td>10kHz</td><td>0 ± 0.7dB</td></tr><tr><td>15kHz</td><td>0 ± 0.7dB</td></tr></table> <p>When the specification is not satisfied, put the unit into the REC mode again and adjust using each variable resistor.</p>	Freq.	Level	40Hz	0 ± 1.7dB	1kHz	0 (Ref.)	7kHz	0 ± 0.5dB	10kHz	0 ± 0.7dB	15kHz	0 ± 0.7dB	<p>CH-1: ⌚RV105/AU-75(E-1) ⌚LV103/AU-75(C-2)</p> <p>CH-2: ⌚RV205/AU-75(B-1) ⌚LV203/AU-75(B-2)</p> <p>• When only 15kHz does not satisfy the level.</p> <p>CH-1: ⌚RV501/AU-76(C-1)</p> <p>CH-2: ⌚RV601/AU-76(B-1)</p>
Freq.	Level													
40Hz	0 ± 1.7dB													
1kHz	0 (Ref.)													
7kHz	0 ± 0.5dB													
10kHz	0 ± 0.7dB													
15kHz	0 ± 0.7dB													

• Frequency response adjustment

When the above frequency does not satisfy the specification, adjust using each variable resistor in the REC CONF1 mode.

# 11-26. OXIDE TAPE OVERALL REC/PB LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• Supply a 1kHz signal(+4dBs) to the AUDIO IN CH-1/CH-2 connector.</li> <li>• Insert the BCT-20G cassette and put the unit into the self-REC/PB mode.</li> </ul>	<p>CH-1: TP103/AU-75(H-2), E102/AU-75(D-1) CH-2: TP203/AU-75(G-1), E202/AU-75(B-1)</p> <p>−10 dBs</p> <p>Memorize the difference level from the specified value.</p>	
<p>Step 2</p> <ul style="list-style-type: none"> <li>• CONF1 sw: ON</li> <li>• Put the unit into the REC mode.</li> </ul>	<p>CH-1: TP103/AU-75(H-2), E102/AU-75(D-1) CH-2: TP203/AU-75(G-1), E202/AU-75(B-1)</p> <p>Correct the value memorized in Step 1.</p> <p>When the level is higher than the specified value in Step 1, lower the level proportionally. When it is lower than the specified value, raise the level proportionally.</p>	<p>CH-1: ●RV101/AU-75(H-1) CH-2: ●RV201/AU-75(F-1)</p>
<p>Step 3</p> <ul style="list-style-type: none"> <li>• Put the unit into the self-REC/PB mode.</li> </ul>	<p>CH-1: TP103/AU-75(H-1), E102/AU-75(D-1) CH-2: TP203/AU-75(G-1), E202/AU-75(B-1)</p> <p>−10 ± 0.2 dBs</p> <p>If the specification is not satisfied, repeat Step 1.</p>	



# 11-27. METAL TAPE OVERALL REC/PB LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>Supply a 1kHz signal(+4dBs) to the AUDIO IN CH-1/CH-2 connector.</li> <li>Insert the BCT-20M cassette and put the unit into the self-REC/PB mode.</li> </ul>	<p>CH-1: TP103/AU-75(H-1), E102/AU-75(D-1) CH-2: TP203/AU-75(G-1), E202/AU-75(B-1)</p> <p>— 10 dBs</p> <p>Memorize the difference level from the specified value.</p>	
<p>Step 2</p> <ul style="list-style-type: none"> <li>Put the unit into the REC mode.</li> </ul>	<p>CH-1: TP103/AU-75(H-1), E102/AU-75(D-1) CH-2: TP203/AU-75(G-1), E202/AU-75(B-1)</p> <p>Correct the value memorized in Step 1.</p> <p>When the level is higher than the specified value in Step 1, lower the level proportionally. When it is lower than the specified value, raise the level proportionally.</p>	<p>CH-1: RV104/AU-75(E-1) CH-2: RV204/AU-75(C-1)</p>
<p>Step 3</p> <ul style="list-style-type: none"> <li>Put the unit into the self-REC/PB mode.</li> </ul>	<p>CH-1: TP103/AU-75(H-1), E102/AU-75(D-1) CH-2: TP203/AU-75(G-1), E202/AU-75(B-1)</p> <p>— 10 ± 0.2 dBs</p> <p>If the specification is not satisfied, repeat Step 1.</p>	

## 11-28. CONF I HEAD FREQUENCY RESPONSE ADJUSTMENT

machine conditions for adjustment	specifications	adjustments																		
<ul style="list-style-type: none"> <li>• Set S301 on the AU-76 board to ON.</li> <li>• Connect an oscillator to the AUDIO IN CH-1/CH-2 connector.</li> <li>• Insert the BCT-20M cassette and put the unit into the REC mode.</li> <li>• Set the oscillator frequency level to 40Hz, 1kHz, 7kHz, 10kHz and 15kHz at -16dBs and record each frequency for approx. 10 seconds.</li> <li>• Play back the recorded tape.</li> </ul> <p>• After adjustment is completed, check using the BCT-20G. Set S301 on the AU-76 board to OFF.</p>	<p>AUDIO OUT CH-1 connector (Terminated in 600 ohms.) AUDIO OUT CH-2 connector (Terminated in 600 ohms.)</p> <table border="1"> <thead> <tr> <th>Freq.</th><th>Level (Metal tape)</th><th>Level (Oxide tape)</th></tr> </thead> <tbody> <tr> <td>40Hz</td><td>0 ± 2.7dB</td><td>0 ± 2.7dB</td></tr> <tr> <td>1kHz</td><td>0 (Ref.)</td><td>0 (Ref.)</td></tr> <tr> <td>7kHz</td><td>0 ± 1 dB</td><td>0 ± 1 dB</td></tr> <tr> <td>10kHz</td><td>0 ± 1 dB</td><td>0 ± 1 dB</td></tr> <tr> <td>15kHz</td><td>0 ± 1 dB</td><td>0 ± 1 dB</td></tr> </tbody> </table>	Freq.	Level (Metal tape)	Level (Oxide tape)	40Hz	0 ± 2.7dB	0 ± 2.7dB	1kHz	0 (Ref.)	0 (Ref.)	7kHz	0 ± 1 dB	0 ± 1 dB	10kHz	0 ± 1 dB	0 ± 1 dB	15kHz	0 ± 1 dB	0 ± 1 dB	<ul style="list-style-type: none"> <li>• 3kHz, 7kHz portion CH-1: RV102/AU-76(E-8) CH-2: RV202/AU-76(F-7)</li> <li>• 10kHz, 15kHz portion CH-1: RV101/AU-76(D-8) CH-2: RV201/AU-76(F-8)</li> <li>• High-frequency fine tuning CH-1: S101/AU-76(D-8) CH-2: S201/AU-76(F-8)</li> </ul>
Freq.	Level (Metal tape)	Level (Oxide tape)																		
40Hz	0 ± 2.7dB	0 ± 2.7dB																		
1kHz	0 (Ref.)	0 (Ref.)																		
7kHz	0 ± 1 dB	0 ± 1 dB																		
10kHz	0 ± 1 dB	0 ± 1 dB																		
15kHz	0 ± 1 dB	0 ± 1 dB																		

## 11-29. CONF I LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Set S301 on the AU-76 board to ON.</li> <li>• Supply a 1kHz signal(+4dBs) to the AUDIO IN CH-1/CH-2 connector.</li> <li>• Insert the BCT-20M cassette and put the unit into the REC mode.</li> <li>• Play back the recorded tape.</li> <li>• After adjustment is completed, set S301 on the AU-76 board to OFF.</li> </ul>	<p>Step 1 CH-1: TP102/AU-76(E-8), E101/AU-76(D-7) CH-2: TP202/AU-76(F-5), E201/AU-76(F-5) -10 ± 0.2 dBs (for checking) -10 ± 0.1 dBs (for adjustment)</p>	<p>CH-1: RV103/AU-76(E-8) CH-2: RV203/AU-76(F-7)</p>
	<p>Step 2 CH-1: TP103/AU-76(D-1), E102/AU-76(D-1) CH-2: TP203/AU-76(D-1), E202/AU-76(C-1) -10 ± 0.2 dBs (for checking) -10 ± 0.1 dBs (for adjustment)</p>	<p>CH-1: RV104/AU-76(B-8) CH-2: RV204/AU-76(B-8)</p>



# 11-30. OVERALL CROSSTALK ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a balanced 1kHz signal (+10dBs) to the AUDIO IN CH-1 connector.</li> <li>• Supply no signal to the AUDIO IN CH-2 connector.</li> <li>• AUDIO CH-2 INPUT LEVEL sw: HIGH</li> <li>• CH-2 600Ω sw: ON</li> <li>• CONF1 sw: ON</li> <li>• Insert the BCT-20M cassette and put the unit into the REC mode.</li> <li>• After adjustment is completed, set the AUDIO CH-2 INPUT LEVEL switch to LOW, 600-ohm switch to OFF, and CONF1 switch to OFF.</li> </ul>	<p>AUDIO OUT CH-2 connector</p> <p>Minimize the level.</p>	<p>RV210/AU-75(B-8)</p> <p>RV211/AU-75(on the IC210(A-8))</p>
<ul style="list-style-type: none"> <li>• Supply a balanced 1kHz signal (+10dBs) to the AUDIO IN CH-2 connector.</li> <li>• Supply no signal to the AUDIO IN CH-1 connector.</li> <li>• AUDIO CH-1 INPUT LEVEL sw: HIGH</li> <li>• CH-1 600Ω sw: ON</li> <li>• CONF1 sw: ON</li> <li>• Insert the BCT-20M cassette and put the unit into the REC mode.</li> <li>• After adjustment is completed, set the AUDIO CH-1 INPUT LEVEL switch to LOW, 600-ohm switch to OFF, and CONF1 switch to OFF.</li> </ul>	<p>AUDIO OUT CH-1 connector</p> <p>Minimize the level.</p>	<p>RV110/AU-75(C-8)</p>





# 11-31. AUDIO INSERT MODE CROSSTALK ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Set RV404, RV405, RV504, and RV505 to the 4:00 position.</li> </ul>		
<p>Step 1 METAL</p> <p>CH-1 insert crosstalk (CH-2 insert crosstalk)</p> <ul style="list-style-type: none"> <li>Connect the 1kHz and 9kHz signals (+4dBs) to AUDIO IN CH-1/CH-2 connector.</li> <li>Insert the BCT-20M and put the set into the CH-1 AUDIO INSERT mode.</li> <li>Set the CH-2 INSERT button to OFF.</li> <li>Insert the BCT-20M and put the set into the CH-2 AUDIO INSERT mode.</li> <li>Set the CH-1 INSERT button to OFF.</li> </ul>	<p>AUDIO OUT CH-2 connector (Terminated in 600 ohms.) AUDIO OUT CH-1 connector (Terminated in 600 ohms.)</p> <p>Minimize the level.</p>	<ul style="list-style-type: none"> <li>1kHz RV503/AU-75(B-5) (RV403/AU-75(D-4))</li> <li>9kHz RV504/AU-75(C-5) (RV404/AU-75(C-4))</li> </ul>
<p>i )</p> <ul style="list-style-type: none"> <li>Oscillator's frequency: 16kHz</li> </ul>	<p>AUDIO OUT CH-2 connector (Terminated in 600 ohms.) AUDIO OUT CH-1 connector (Terminated in 600 ohms.)</p> <p>-40dBs or less</p>	<ul style="list-style-type: none"> <li>RV505/AU-75(B-6)</li> <li>LV501/AU-75(A-10)</li> <li>{ RV405/AU-75(C-6)</li> <li>LV401/AU-75(B-10) }</li> </ul>
<p>ii )</p> <ul style="list-style-type: none"> <li>Oscillator's frequency: 10kHz/12.5kHz</li> </ul>	<p>AUDIO OUT CH-2 connector (Terminated in 600 ohms.) AUDIO OUT CH-1 connector (Terminated in 600 ohms.)</p> <p>10kHz = -40dBs or less 12.5kHz = -26dBs or less</p>	<ul style="list-style-type: none"> <li>RV503/AU-75(B-5)</li> <li>RV504/AU-75(C-5)</li> <li>{ RV403/AU-75(D-4)</li> <li>RV404/AU-75(C-4) }</li> </ul>
<p>Step 2 OXIDE</p> <ul style="list-style-type: none"> <li>Oscillator's frequency: 17kHz</li> <li>Using a short clip, short between TP402 on the TC-40 board and GND.</li> </ul>	<p>i )</p> <p>+1dBs or less = OK</p> <hr/> <p>ii ) +1dBs to +5dBs</p> <p>Set 0dBs at RV505/AU-75 and LV501/AU-75(RV405/AU-75, LV401/AU-75) and readjust from Step 2 ii ) and later.</p> <hr/> <p>iii ) +5dBs and higher</p> <p>Set -1dBs at RV505/AU-75 and LV501/AU-75 (RV405/AU-75 and LV-401/AU-75) and readjust from Step 1 ii ) and later).</p>	
<ul style="list-style-type: none"> <li>Check (METAL tape)</li> </ul>	<p>7kHz, -18dBs or less 10kHz, -18dBs or less 12.5kHz, -21dBs or less</p>	

## 11-32. TIME CODE OVERALL CROSSTALK ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply no signal to the AUDIO IN CH-1/CH-2 connector.</li> <li>• S2/SY-64 (LTC sw): EXT</li> <li>• Supply a 1.2kHz signal (+4dBs) to the TIME CODE IN connector.</li> <li>• Insert the BCT-20M cassette and put the unit into the REC mode.</li> <li>• After adjustment is completed, set S2 on the SY-64 board to the former position.</li> </ul>	<p>Connect a spectrum analyzer to the AUDIO OUT CH-1/CH-2 connector.</p> <p>The 1.2kHz level should be -61dBs or less.</p> <p>Set the HEADPHONES volume control to MAX and adjust RV108 and RV208 so that no sound is heard from the headphones.</p>	<p>CH-1:  RV108/AU-75(C-8)</p> <p>CH-2:  RV208/AU-75(B-8)</p>

## 11-33. TIME CODE INSERT CROSSTALK ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Insert the BCT-20G cassette on which only a CTL signal is recorded.</li> <li>• Supply no signal to the AUDIO IN CH-1/CH-2 connector.</li> <li>• AUDIO CH-1/CH-2 INPUT LEVEL sw: HIGH</li> <li>• 600Ω sw: ON</li> <li>• MODE: TC INSERT</li> <li>• After adjustment is completed, set the INPUT LEVEL switch to LOW and the 600-ohm switch to OFF.</li> </ul>	<p>AUDIO OUT CH-1 connector (Terminated in 600 ohms.)          AUDIO OUT CH-2 connector (Terminated in 600 ohms.)</p> <p>Minimize the level.</p> <p>(-16 dBm or less)</p>	<p>CH-1:  RV401/AU-75(B-10)</p> <p>CH-2:  RV501/AU-75(A-10)</p> <p>CH-1:  RV402/AU-75(C-9)</p> <p>CH-2:  RV502/AU-75(B-9)</p> <p>Repeat the above adjustment.</p>

※ In Section 11-34 AFM REC Level Adjustment through Section 11-46 AFM Audio OUT REC/PB Level Adjustment, set the switches as follows:

- Level control panel  
AUDIO MONITOR switch :AFM
- Subcontrol panel  
AFM INPUT switch :CH-3/-4

[Connection]

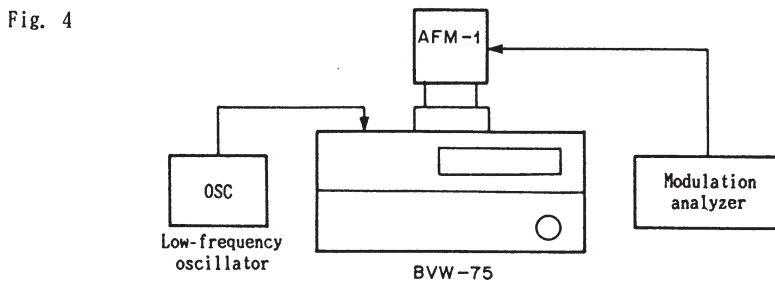
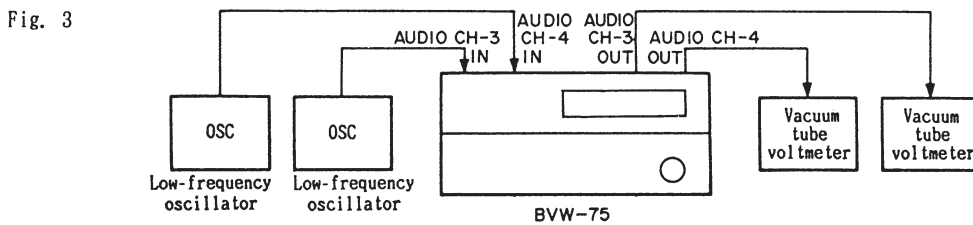
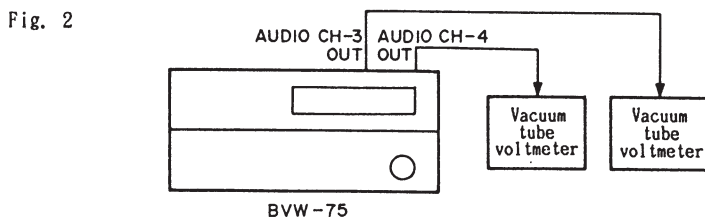
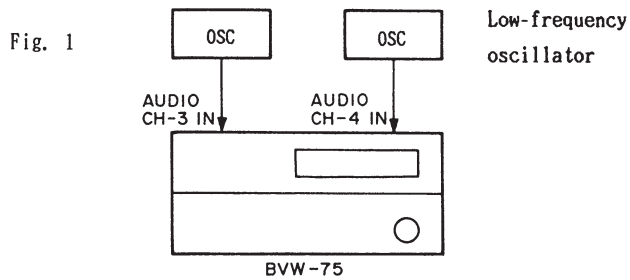


Fig. 5

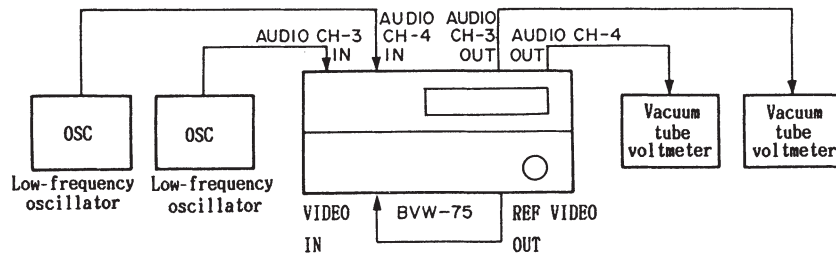
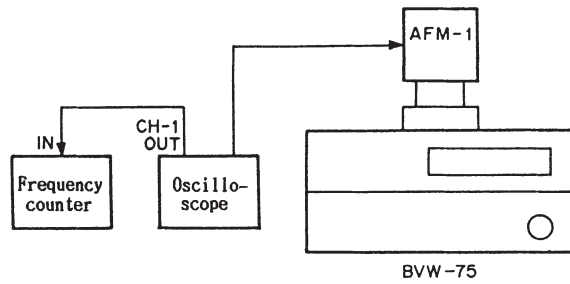


Fig. 6



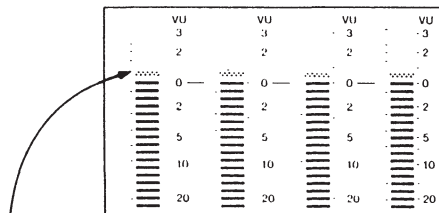
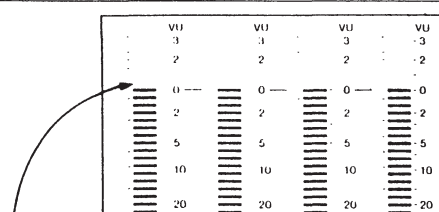
### 11-34. AFM REC LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Supply a 400Hz signal(+4dBs) to the AUDIO IN CH-3/CH-4 connector.</li> <li>MODE: EE</li> <li>CONNECTION: Fig. 1</li> </ul>	TP301/AFM-1(B-5) TP401/AFM-1(E-4)  $-10 \pm 0.1 \text{ dBs}$	CH-3: ⌚RV301/BF-28(A-3) (Panel display: CH-3 REC VR)  CH-4: ⌚RV401/BF-28(A-2) (Panel display: CH-4 REC VR)

### 11-35. AFM AUDIO OUT LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Supply a 400Hz signal(+4dBs) to the AUDIO IN CH-3/CH-4 connector.</li> <li>MODE: EE</li> <li>CONNECTION: Fig. 3</li> </ul>	AUDIO OUT CH-3 connector (Terminated in 600 ohms.) AUDIO OUT CH-4 connector (Terminated in 600 ohms.)  $4 \pm 0.1 \text{ dBm}$	CH-3: ⌚RV301/CP-161A(C-1) ⌚RV351/CP-111(D-2)  CH-4: ⌚RV401/CP-161A(D-1) ⌚RV451/CP-111(D-1)

### 11-36. LEVEL METER 0VU ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Supply a 1kHz signal(+4.2dBs) to the AUDIO IN CH-1/CH-2 connector.</li> <li>SI/DP-73(SCALE VU/dB select SW): VU (Located on the upper left.)</li> <li>AFM INPUT sw: CH-1/2</li> <li>MODE: EE</li> </ul>	 <p>The segment which is upper by one step than the display indicator's 0VU should blink.</p>	CH-1: ⌚RV501/BF-28(I-3) CH-2: ⌚RV601/BF-28(I-2) CH-3: ⌚RV701/BF-28(I-2) CH-4: ⌚RV801/BF-28(I-1)
<ul style="list-style-type: none"> <li>Set the input level to 4dBs.</li>   <li>After adjustment is completed, set SI on the DP-73 board to the former position.</li> </ul>	 <p>Up to the display indicator's 0VU lights, and the segment which is upper by one step should go off.</p>	



### 11-37. LOG AMP LEVEL ADJUSTMENT

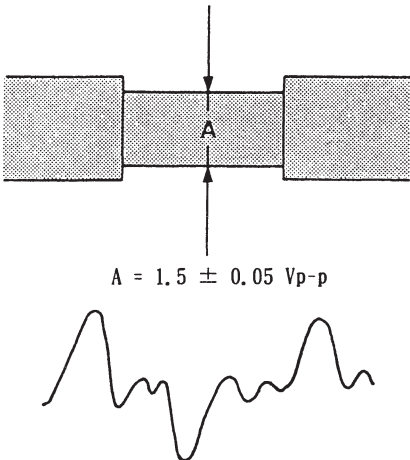
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• SI/DP-73(SCALE VU/dB select SW): dB</li> <li>• AFM INPUT sw: CH-1/2</li> </ul> <p>Step 1</p> <ul style="list-style-type: none"> <li>• Supply a 1kHz signal(<math>-17 \pm 0.1</math>dBs) to the AUDIO IN CH-1/CH-2 connector.</li> </ul>	Adjust so that the -30dB display indicator lights and no deviation occurs in CH-1 through CH-4.	RV903/BF-28(H-4) (MIDDLE LEVEL)
<p>Step 2</p> <ul style="list-style-type: none"> <li>• Supply a 1kHz signal(<math>-27 \pm 0.1</math>dBs) to the AUDIO IN CH-1/CH-2 connector.</li> </ul>	Adjust so that the -40dB display indicator lights and no deviation occurs in CH-1 through CH-4.	RV901/BF-28(H-5) (LOW LEVEL)
<p>Step 3</p> <ul style="list-style-type: none"> <li>• Supply a 1kHz signal(<math>+13 \pm 0.1</math>dBs) to the AUDIO IN CH-1/CH-2 connector.</li> </ul>	Adjust so that the 0dB display indicator lights and no deviation occurs in CH-1 through CH-4.	RV902/BF-28(H-5) (HIGH LEVEL)
<p>Step 4</p> <ul style="list-style-type: none"> <li>• Supply a 1kHz signal(<math>-27 \pm 1</math>dBs) to the AUDIO IN CH-1/CH-2 connector.</li> </ul>	<p>Check that the <math>-40 \pm 1</math>dB display indicator lights.</p> <p>Repeat the above Steps until the specification is satisfied.</p>	

### 11-38. AFM CARRIER FREQUENCY ADJUSTMENT

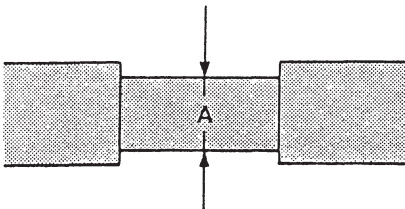
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply no signal to the AUDIO IN CH-3/CH-4 connector.</li> <li>• Insert the BCT-20M cassette and put the unit into the REC mode.</li> <li>• CONNECTION: Fig. 6</li> </ul>	TP101/AFM-1(E-2) TP103/AFM-1(D-1) $310 \pm 1$ kHz	CH-3: RV101/AFM-1(E-2) RV103/AFM-1(D-3)
	TP201/AFM-1(B-2) TP203/AFM-1(B-3) $540 \pm 1$ kHz	CH-4: RV201/AFM-1(A-2) RV203/AFM-1(A-3)

### 11-39. AFM RF LEVEL ADJUSTMENT

※ Section 11-38 AFM Carrier Frequency Adjustment should be completed.

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back an AFM 400Hz signal (25kHz deviation) on alignment tape CR5-1B.</li> </ul>	<p>TP3/AFM-1(CH-3)(D-1) TP4/AFM-1(CH-4)(B-1)</p>  <p><math>A = 1.5 \pm 0.05 \text{ Vp-p}</math></p> <p>The waveform should not be clipped.</p>	<p>CH-3: ●RV2/AFM-1(D-2) CH-4: ●RV4/AFM-1(B-2)</p> <p>TRIG: TP701/AFM-1(B-6)</p>

### 11-40. AFM DOC LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back an AFM 400Hz signal (25kHz deviation) on alignment tape CR5-1B.</li> </ul>	<p>TP5/AFM-1(CH-3)(D-1) TP6/AFM-1(CH-4)(B-2)</p>  <p><math>A = 0.3 \pm 0.02 \text{ Vp-p}</math></p>	<p>CH-3: ●RV5/AFM-1(D-1) CH-4: ●RV6/AFM-1(B-2)</p> <p>TRIG: TP701/AFM-1(B-6)</p>

#### 11-41. SWITCHING NOISE ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 400Hz signal(+4dBs) to the AUDIO IN CH-3/CH-4 connector.</li> <li>• Insert the BCT-20M cassette, record it for approx. one minute, and play back the recorded portion on tape.</li> </ul>	AUDIO OUT CH-3 connector (Terminated in 600 ohms.) AUDIO OUT CH-4 connector (Terminated in 600 ohms.)  Minimize the distortion factor. (0.5% or less)	CH-3: ⌚RV105/AFM-1(B-4) CH-4: ⌚RV205/AFM-1(B-4)

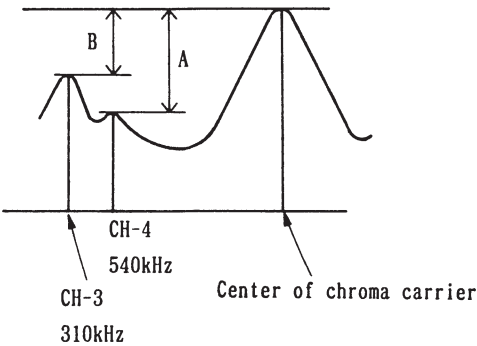

#### 11-42. AFM PB SNR OUTPUT LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back an AFM 400Hz signal (25kHz deviation) on alignment tape CR5-1B.</li> </ul>	TP303/AFM-1(CH-3)(B-6) TP403/AFM-1(CH-4)(E-5)  $-10 \pm 0.1 \text{ dBs}$	CH-3: ⌚RV102/AFM-1(B-3) CH-4: ⌚RV202/AFM-1(C-3)

#### 11-43. AFM PB LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back an AFM 400Hz signal (25kHz deviation) on alignment tape CR5-1B.</li> <li>• CONNECTION: Fig. 2</li> </ul>	AUDIO OUT CH-3 connector (Terminated in 600 ohms.) AUDIO OUT CH-4 connector (Terminated in 600 ohms.)  $4 \pm 0.1 \text{ dBm}$	CH-3: ⌚RV302/BF-28(A-2) (Panel display: CH-3 PB VR) CH-4: ⌚RV402/BF-28(A-1) (Panel display: CH-4 PB VR)

# 11-44. AFM RECORDING CURRENT ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• Supply no signal to the AUDIO IN CH-3/CH-4 connector.</li> <li>• Supply a black burst signal to the VIDEO IN connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• Insert the BCT-20M cassette.</li> <li>• Remove short socket SP101 on the RP-29(C) board and short between TP103 and TP104 using a shorting clip.</li> <li>• Connect a current probe to the shorting clip and the output to the spectrum analyzer.</li> <li>• MODE: REC</li> </ul>	<p>TP103-TP104/RP-29(C)(C-3): CH-A TP105-TP106/RP-29(C)(C-2): CH-B</p>  <p style="text-align: center;"> <math>A = -26 \pm 0.2 \text{ dB}</math>  <math>B = -23 \pm 0.2 \text{ dB (check)}</math> </p>	<p>Set RV603 near the center position.</p> <p>CH-4:  RV602/AFM-1(C-3)  (When no adjustment can be made, adjust using RV603.)</p>
<p>Step 2</p> <ul style="list-style-type: none"> <li>• After Step 1 is adjusted, insert SP101 on the RP-29(C) board, remove SP102, and short between TP105 and TP106 using a shorting clip.</li> <li>• Connect a current probe to the shorting clip and the output to the spectrum analyzer.</li> <li>• MODE: REC</li> </ul>	<p>CH-A <math>A = -26 \pm 0.5 \text{ dB}</math>  <math>B = -23 \pm 0.5 \text{ dB (check)}</math></p> <p>CH-B <math>A = -26 \pm \frac{2}{3} \text{ dB}</math>  <math>B = -23 \pm \frac{2}{3} \text{ dB (check)}</math></p>	

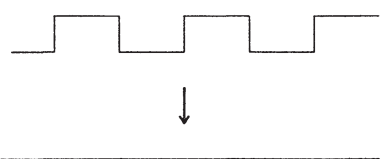
# 11-45. AFM MODULATION ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<p>Step 1 (Reference modulation)</p> <ul style="list-style-type: none"> <li>• Insert alignment tape CR5-1B and play back an AFM 400Hz (25kHz deviation) signal.</li> <li>• Supply a 400Hz signal (+4dBs) to the AUDIO IN CH-3/CH-4 connector.</li> <li>• Insert the BCT-20M, put the unit into the REC mode, and play back the recorded portion on tape.</li> </ul>	<p>AUDIO OUT CH-3 connector (Terminated in 600 ohms.) AUDIO OUT CH-4 connector (Terminated in 600 ohms.)</p> <p>Align the alignment tape level with the level in the PB mode.</p>	<p>CH-3: ⌚RV501/AFM-1(C-3)</p> <p>CH-4: ⌚RV502/AFM-1(D-3)</p>
<p>Step 2 (Maximum modulation)</p> <ul style="list-style-type: none"> <li>• Insert alignment tape CR5-1B and play back an AFM 400Hz (25kHz deviation) signal.</li> <li>• Supply a 400Hz signal (+24dBs) to the AUDIO IN CH-3/CH-4 connector.</li> <li>• Insert the BCT-20M cassette, put the unit into the REC mode, and play back the recorded portion on tape.</li> </ul>	<p>AUDIO OUT CH-3 connector (Terminated in 600 ohms.) AUDIO OUT CH-4 connector (Terminated in 600 ohms.)</p> <p>Align the alignment tape level with the level in the PB mode.</p>	<p>CH-3: ⌚RV104/AFM-1(E-3)</p> <p>CH-4: ⌚RV204/AFM-1(A-4)</p>

# 11-46. AFM AUDIO OUT REC/PB LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 400Hz signal (+4dBs) to the AUDIO IN CH-3/CH-4 connector.</li> <li>• Insert the BCT-20M cassette, record it for approx. 30 seconds, and play back the recorded portion on tape.</li> <li>• CONNECTION: Fig. 5</li> </ul>	<p>AUDIO OUT CH-3 connector (Terminated in 600 ohms.) AUDIO OUT CH-4 connector (Terminated in 600 ohms.)</p> <p><math>4 \pm 0.2 \text{ dBm}</math></p>	<p>CH-3: ⌚RV501/AFM-1(C-3)</p> <p>CH-4: ⌚RV502/AFM-1(D-3)</p>

11-47. LTC AMP OUT ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"><li>• Insert the BCT-20M blank cassette and put the unit into the REC mode.</li><li>• S2/SY-64: INT</li><li>• S3/SY-64: PRESET</li><li>• CTL/TC/U-BIT sw: CTL</li></ul>	<div>CH-1: CN205, 11B/TC-40</div> <div>CH-2: CN205, 11C/TC-40</div> <div>ADD mode</div> <div></div> <div>Minimize the level difference.</div>	RV202/TC-40(D-4)

## SECTION 12

### VIDEO SYSTEM ALIGNMENT

#### 【Equipment Required】

- Dual-trace oscilloscope
- NTSC signal generator: Tektronix x1410 or the equivalent
- Waveform/vector monitor: Tektronix 1750 or the equivalent
- NTSC Video sweep generagor: Shibasoku 205A/2 or the equivalent
- Vectorscope: Tektronix 520A or the equivalent
- Waveform monitor
- NTSC component signal generator: Tektronix TSG-300 or the equivalent
- Sweep generator: Shibasoku VS12AX or the equivalent
- Alignment tapes CR5-2A and CR5-1B

#### CR5-2A (8-960-097-44) Contents

TIME min, sec	VIDEO TRACK
0:00	75% Color Bars
3:00	Multi Burst Y: 0.5, 1, 2, 3, 4.1, 4.5 MHz C: 0.2, 0.5, 1, 1.5 MHz
6:00	Bowtie & 12.5T
9:00	Pulse & Bar C: No signal
1:00	Quad Phase
3:00	
15:00	COMPOSITE Monoscope Video Phase, Diehedral

#### CR5-1B (8-960-096-41) Contents

TIME min, sec	VIDEO TRACK	AFM
0:00	RF Sweep	No Signal
2:00		
5:00	60% H Sweep (CTDM)	
8:00	Pulse & Bar (CTDM)	
11:00	Multi Burst	
14:00	Pulse & Bar	
16:30		400Hz Sine Wave 25kHz Deviation
17:00	75% Color Bars	75kHz Deviation
19:00	50% Bowtie & 12.5T	No Signal
22:00	Line 17 Signal	
24:00	Quad Phase	
26:00	Flat Field	
28:00	75% Color Bars with Dropout	
30:00	Composite V Sweep with VISC	

## 【Switch Setting】

### • Function Control Panel

CONFI switch : OFF  
 PB, PB/EE switch : PB/EE  
 CTL/TC/U-BIT switch : CTL  
 DT SELECT switch : OFF

### • Control Panel

AUDIO MONITOR switch : ST/MIX  
 AUDIO MONITOR switch : LNG  
 AUDIO LIMITER switch : OFF  
 AUDIO MIXING switch : OFF  
 TRACKING CONTROL switch : FIXED  
 REMOTE/LOCAL switch : LOCAL

### • Subcontrol Panel

TBC CONTROL switch : LOCAL  
 VIDEO switch : PRESET  
 CHROMA switch : PRESET  
 SETUP switch : PRESET  
 Y/C DELAY switch : PRESET  
 TBC BYPASS switch : ON  
 VIDEO INPUT switch : AUTO  
 REC INHIBIT switch : OFF  
 CAPSTAN LOCK switch : 2/4 FD  
 AFM INPUT switch : CH-1/2  
 AUDIO MONITOR switch : ST  
 DOLBY NR switch : OFF

### • Connector Panel

REF VIDEO switch : AUTO  
 REF VIDEO 75 ohm termination SW : ON  
 VIDEO IN 75 ohm termination SW : ON  
 COMPONENT select sw : COMP 2

### • SY-64 Board

VITC/AUTO/LTC switch : LTC  
 EXT/INT switch : INT  
 REGEN/PRESET switch : PRESET  
 REC RUN/FREE RUN switch : FREE RUN  
 VITC ON/OFF switch : ON  
 ID PRESET switch : OFF

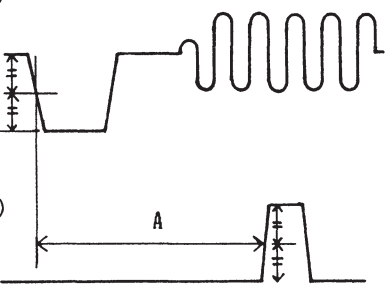
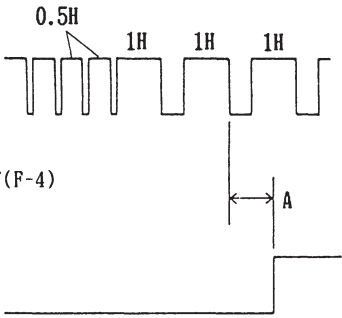
### • SY-61 board

VTR CONTROL switch : INT  
 CHARACTER ON/OFF switch : ON  
 SYNCHRONIZE ON/OFF switch : ON

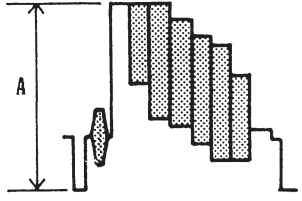


## 12-1. DEC BOARD ADJUSTMENT

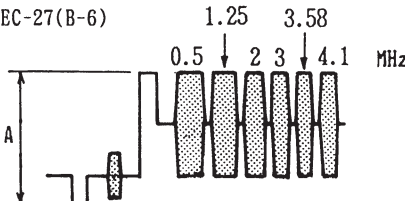
### 12-1-1. Burst Gate Pulse Adjustment

machine conditios for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 75% color-bar signal to the VIDEO IN connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• MODE: EE</li> </ul>	<p>TP1/DEC-27(F-6)</p>  <p>TP4/DEC-27(B-4)</p> <p><math>A = 6.2 \pm 0.2 \mu\text{sec}</math></p>	<p>RV3/DEC-27(E-5)</p> <p>TRIG: TP1/DEC-27(F-6)</p>
	<p>TP1/DEC-27(F-6) (Even field)</p>  <p>TP3/DEC-27(F-4)</p> <p><math>A = 35 \pm 5 \mu\text{sec}</math></p>	<p>RV4/DEC-27(G-4)</p> <p>TRIG: TP1/DEC-27(F-6)</p>

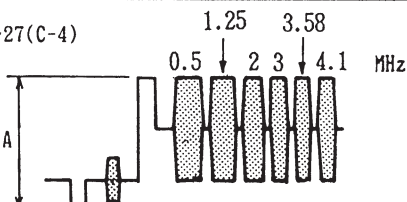
### 12-1-2. AGC Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 100% color-bar signal to the VIDEO IN connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• MODE: EE</li> </ul>	<p>TP1/DEC-27(F-6)</p>  <p><math>0.50 \pm 0.01 \text{ Vp-p}</math></p>	<p>RV2/DEC-27(F-6)</p> <p>TRIG: TP1/DEC-27(F-6)</p>

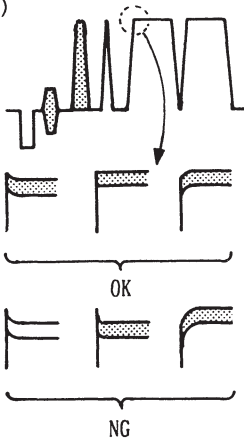

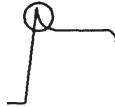
### 12-1-3. 0H Delay Frequency Response Adjustment


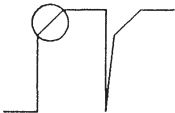
machine conditions for adjustment	specifications	adjustments														
<ul style="list-style-type: none"><li>• Supply a multi burst signal to the VIDEO IN connector.</li><li>• INPUT SELECT sw: COMPOSITE</li><li>• MODE: EE</li></ul>	<p>TP6/DEC-27(B-6)</p>  <p><math>A = 0.48 \pm 0.02 \text{ Vp-p}</math></p> <table><thead><tr><th>Freq.</th><th>Spec.</th></tr></thead><tbody><tr><td>0.5MHz</td><td>100%(Ref. )</td></tr><tr><td>1.25MHz</td><td><math>100 \pm 4 \%</math></td></tr><tr><td>2.0MHz</td><td><math>100 \pm 4 \%</math></td></tr><tr><td>3.0MHz</td><td><math>100 \pm 4 \%</math></td></tr><tr><td>3.58MHz</td><td>100%</td></tr><tr><td>4.1MHz</td><td><math>100 \pm 4 \%</math></td></tr></tbody></table> <p>Adjust so that the 3.58MHz level is the same as the reference value.</p>	Freq.	Spec.	0.5MHz	100%(Ref. )	1.25MHz	$100 \pm 4 \%$	2.0MHz	$100 \pm 4 \%$	3.0MHz	$100 \pm 4 \%$	3.58MHz	100%	4.1MHz	$100 \pm 4 \%$	<p>RV5/DEC-27(B-6)</p> <p>TRIG: TP1/DEC-27(F-6)</p>
Freq.	Spec.															
0.5MHz	100%(Ref. )															
1.25MHz	$100 \pm 4 \%$															
2.0MHz	$100 \pm 4 \%$															
3.0MHz	$100 \pm 4 \%$															
3.58MHz	100%															
4.1MHz	$100 \pm 4 \%$															

### 12-1-4. 1H Delay Frequency Response Adjustment

machine conditions for adjustment	specifications	adjustments														
<ul style="list-style-type: none"><li>• Supply a multi burst signal to the VIDEO IN connector.</li><li>• INPUT SELECT sw: COMPOSITE</li><li>• MODE: EE</li></ul>	<p>TP7/DEC-27(C-4)</p>  <p><math>A = 0.48 \pm 0.05 \text{ Vp-p}</math></p> <table><thead><tr><th>Freq.</th><th>Spec.</th></tr></thead><tbody><tr><td>0.5MHz</td><td>100%(Ref.)</td></tr><tr><td>1.25MHz</td><td><math>100 \pm 6 \%</math></td></tr><tr><td>2.0MHz</td><td><math>100 \pm 6 \%</math></td></tr><tr><td>3.0MHz</td><td><math>100 \pm 6 \%</math></td></tr><tr><td>3.58MHz</td><td><math>100 \pm 2 \%</math></td></tr><tr><td>4.1MHz</td><td><math>100 \pm 6 \%</math></td></tr></tbody></table> <p>Adjust so that the 3.58MHz level is the same as the reference value.</p>	Freq.	Spec.	0.5MHz	100%(Ref.)	1.25MHz	$100 \pm 6 \%$	2.0MHz	$100 \pm 6 \%$	3.0MHz	$100 \pm 6 \%$	3.58MHz	$100 \pm 2 \%$	4.1MHz	$100 \pm 6 \%$	<p>CV1/DEC-27(D-6)</p> <p>TRIG: TP1/DEC-27(F-6)</p>
Freq.	Spec.															
0.5MHz	100%(Ref.)															
1.25MHz	$100 \pm 6 \%$															
2.0MHz	$100 \pm 6 \%$															
3.0MHz	$100 \pm 6 \%$															
3.58MHz	$100 \pm 2 \%$															
4.1MHz	$100 \pm 6 \%$															

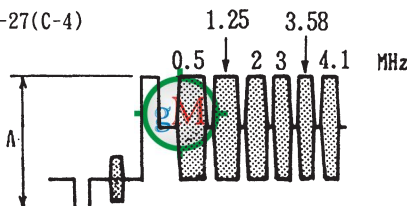
# 12-1-5. 1H Delay Waveform Compensation Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a pulse &amp; bar signal to the VIDEO IN connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• MODE: EE</li> </ul>	<p>TP7/DEC-27(C-4)</p>  <p>The waveform is satisfactory if its luminescent line is raised or lowered by half in width.</p>	
	<p>When the waveform at the portion marked with ○ in the figure above is as shown below.</p>  <p>SP7: OPEN SP8: SHORT</p> <p>If the specification is not satisfied, short SP7, SP8, SP5 or SP6.</p>	
	<p>When the waveform at the portion marked with ○ in Step 1 is as shown below.</p>  <p>SP7: SHORT SP8: OPEN</p> <p>If the specification is not satisfied, short SP7, SP8, SP5 or SP6.</p>	

	<p>When the waveform at the portion marked with ○ in the waveform above is as shown below.</p>  <p>SP5: SHORT SP6: OPEN</p>	
	<p>When the waveform at the portion marked with ○ in the waveform above is as shown below.</p>  <p>SP5: OPEN SP6: SHORT</p>	

• After adjustment is completed, make Section 12-1-4 1H Delay Frequency Response Adjustment again.

#### 12-1-6. 2H Delay Frequency Response Adjustment

machine conditions for adjustment	specifications	adjustments														
<ul style="list-style-type: none"><li>• Supply a multi burst signal to the VIDEO IN connector.</li><li>• INPUT SELECT sw: COMPOSITE</li><li>• MODE: EE</li></ul>	<p>TP8/DEC-27(C-4)</p>  <p><math>A = 0.48 \pm 0.05 \text{ V}_{p-p}</math></p> <table><thead><tr><th>Freq.</th><th>Spec.</th></tr></thead><tbody><tr><td>0.5MHz</td><td>100%(Ref.)</td></tr><tr><td>1.25MHz</td><td><math>100 \pm 8 \%</math></td></tr><tr><td>2.0MHz</td><td><math>100 \pm 8 \%</math></td></tr><tr><td>3.0MHz</td><td><math>100 \pm 8 \%</math></td></tr><tr><td>3.58MHz</td><td><math>100 \pm 8 \%</math></td></tr><tr><td>4.1MHz</td><td><math>100 \pm 8 \%</math></td></tr></tbody></table> <p>Adjust so that the 3.58MHz level is the same as the reference value.</p>	Freq.	Spec.	0.5MHz	100%(Ref.)	1.25MHz	$100 \pm 8 \%$	2.0MHz	$100 \pm 8 \%$	3.0MHz	$100 \pm 8 \%$	3.58MHz	$100 \pm 8 \%$	4.1MHz	$100 \pm 8 \%$	<p>● CV2/DEC-27(B-5)</p> <p>TRIG: TP1/DEC-27(F-6)</p>
Freq.	Spec.															
0.5MHz	100%(Ref.)															
1.25MHz	$100 \pm 8 \%$															
2.0MHz	$100 \pm 8 \%$															
3.0MHz	$100 \pm 8 \%$															
3.58MHz	$100 \pm 8 \%$															
4.1MHz	$100 \pm 8 \%$															

### 12-1-7. 1H Video Correlation Adjustment

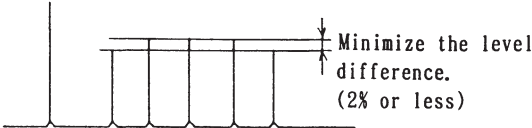
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a multi burst signal to the VIDEO IN connector.</li> <li>• Turn S1 on the DEC-27 to 2H side.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• MODE: EE</li> </ul> <p>After adjustment is completed, turn S1 on the DEC-27 board to 3H side.</p>	<p>TP9/DEC-27(C-3)</p> <p>(The noise level at 0.5MHz through 4.1MHz is less than 20 mVp-p.)</p>	<ul style="list-style-type: none"> <li>• RV5/DEC-27(B-6)</li> <li>• RV8/DEC-27(A-3)</li> <li>• Adjust alternately.</li> </ul> <p>TRIG: TP1/DEC-27(F-6)</p>

### 12-1-8. 2H Video Correlation Adjustment

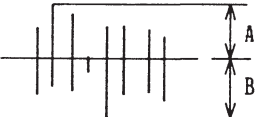
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a multi burst signal to the VIDEO IN connector.</li> <li>• Turn S1 on the DEC-27 board to 3H side.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• MODE: EE</li> </ul>	<p>TP9/DEC-27(C-3)</p> <p>(The noise level at 0.5MHz through 4.1MHz is less than 20 mVp-p.)</p>	<ul style="list-style-type: none"> <li>• RV6/DEC-27(B-5)</li> <li>• RV7/DEC-27(A-3)</li> <li>• Adjust alternately.</li> </ul> <p>TRIG: TP1/DEC-27(F-6)</p>

- After adjustment is completed, perform Section 12-1-6 2H Delay Frequency Response Adjustment again and check that the specifications in Sections 12-1-7 and 12-1-8 are satisfied.

### 12-1-9. Y Linearity Adjustment

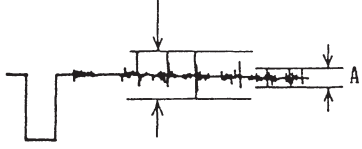
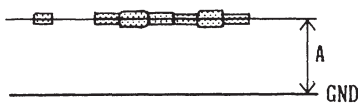
machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• Supply a 5-step staircase signal to the VIDEO IN connector.</li> <li>• INPUT SELECT SW: COMPOSITE</li> <li>• MODE: EE</li> <li>• RESPONSE/WFM: DIFF</li> </ul>	<p>TP11/DEC-27(H-1)</p>  <p>Minimize the level difference. (2% or less)</p>	<p>RV1/DEC-27(F-6)</p> <p>TRIG: 1410 COMP SYNC 1410 SUBCARRIER</p>

### 12-1-10. Noise Canceller Balance Adjustment

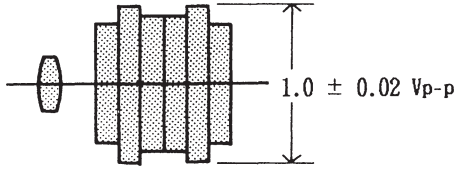
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a pluse &amp; for signal to the VIDEO IN connector.</li> <li>• INPUT SELECT SW: COMPOSITE</li> <li>• MODE: EE</li> <li>• VIDEO INPUT sw/subcontrol panel: NON-STD</li> </ul> <p>• After adjustment is completed, set the VIDEO INPUT switch/subcontrol panel to AUTO.</p>	 <p>A = B</p>	<p>RV20/DEC-27(F-2)</p> <p>TRIG: 1410 COMP SYNC</p>

## 12-1-11. Y/C Cancel Adjustment

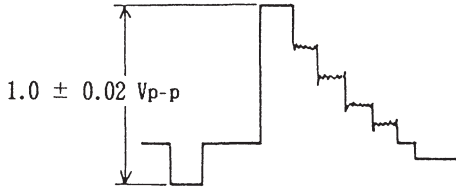
• The adjustment method varies depending on the unit's serial number.

machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• Supply a 75% color-bar signal to the VIDEO IN connector and set the signal generator's Y switch to OFF.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• MODE: EE</li> </ul>	<p>TP11/DEC-27(H-1)</p> <p>Peak portion 120 mVp-p or less</p>  <p>A : Minimize. (20 mVp-p or less)</p>	<p>RV10/DEC-27(E-3) RV15/DEC-27(C-1)</p> <p>TRIG: TP1/DEC-27(F-6)</p>
<p>Step 2</p> <ul style="list-style-type: none"> <li>• Supply a 75% color-bar signal to the VIDEO IN connector and set the signal generator's Y switch to OFF.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• MODE: EE</li> <li>• After adjustment is completed, set the signal generator's Y switch to ON.</li> </ul>	<p>TP12/DEC-27(E-3)</p>  <p>(Confirmation) <math>A = 2.5 \pm \frac{1}{2} \frac{1}{3} \text{ Vdc}</math></p>	<p>TRIG: TP1/DEC-27(F-6)</p>

### 12-1-12. Chroma Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 75% color-bar signal to the VIDEO IN connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• MODE: EE</li> </ul>	<p>TP10/DEC-27(G-3)</p>  <p>1.0 ± 0.02 V<sub>p-p</sub></p>	<p>RV11/DEC-27(G-2)</p> <p>TRIG: TP1/DEC-27(F-6)</p>

### 12-1-13. Y Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 75% color-bar signal to the VIDEO IN connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• MODE: EE</li> </ul>	<p>TP11/DEC-27(H-1)</p>  <p>1.0 ± 0.02 V<sub>p-p</sub></p>	<p>RV13/DEC-27(G-1)</p> <p>TRIG: TP1/DEC-27(F-6)</p>



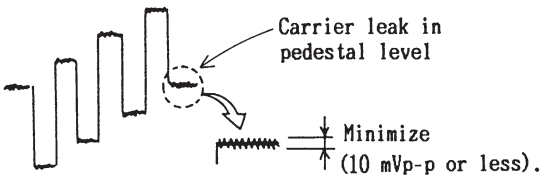
# 12-1-14. Y Frequency Response Adjustment

machine conditions for adjustment	specifications	adjustments												
<ul style="list-style-type: none"><li>• Supply a V sweep signal to the VIDEO IN connector.</li><li>• Set RV12 on the DEC-27 board to the mechanical center position.</li><li>• INPUT SELECT sw: COMPOSITE</li><li>• MODE: EE</li></ul>	<p>TP11/DEC-27(H-1)</p> <div><div><div>0.5</div><div>1</div><div>2</div><div>3</div><div>4</div><div>[MHz]</div></div></div> <table><tr><th>Freq.</th><th>Spec.</th></tr><tr><td>0.5MHz</td><td>100 %(Ref. )</td></tr><tr><td>1 MHz</td><td>100 ± 4 %</td></tr><tr><td>2 MHz</td><td>100 ± 4 %</td></tr><tr><td>3 MHz</td><td>100 ± 4 %</td></tr><tr><td>4 MHz</td><td>100 ± 4 %</td></tr></table>	Freq.	Spec.	0.5MHz	100 %(Ref. )	1 MHz	100 ± 4 %	2 MHz	100 ± 4 %	3 MHz	100 ± 4 %	4 MHz	100 ± 4 %	<p>●CV3/DEC-27(D-2)</p> <p>TRIG: TP1/DEC-27(F-6)</p>
Freq.	Spec.													
0.5MHz	100 %(Ref. )													
1 MHz	100 ± 4 %													
2 MHz	100 ± 4 %													
3 MHz	100 ± 4 %													
4 MHz	100 ± 4 %													

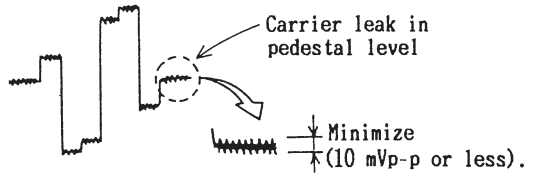
# 12-1-15. Chroma Frequency Response Check

machine conditions for adjustment	specifications	adjustments										
<ul style="list-style-type: none"><li>• Supply a V sweep signal to the VIDEO IN connector.</li><li>• INPUT SELECT sw: COMPOSITE</li><li>• MODE: EE</li></ul>	<p>TP10/DEC-27(G-3)</p> <table><tr><th>Freq.</th><th>Spec.</th></tr><tr><td>A</td><td>100 % (Ref. )</td></tr><tr><td>3MHz</td><td>170 ± 20 %</td></tr><tr><td>Peak</td><td>230 ± 20 %</td></tr><tr><td>4MHz</td><td>220 ± 20 %</td></tr></table>	Freq.	Spec.	A	100 % (Ref. )	3MHz	170 ± 20 %	Peak	230 ± 20 %	4MHz	220 ± 20 %	<p>TRIG: TP1/DEC-27(F-6)</p>
Freq.	Spec.											
A	100 % (Ref. )											
3MHz	170 ± 20 %											
Peak	230 ± 20 %											
4MHz	220 ± 20 %											

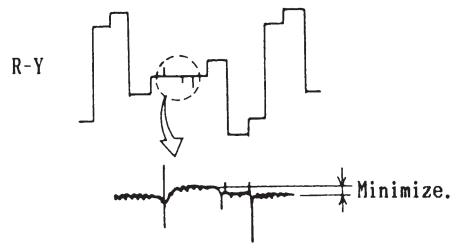
### 12-1-16. B-Y Carrier Balance Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 75% color-bar signal to the VIDEO IN connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• MODE: EE</li> </ul>	<p>TP3/DEC-42(A-3)</p> 	<p>RV1/DEC-42(A-7)</p> <p>TRIG: 1410 SYNC</p>

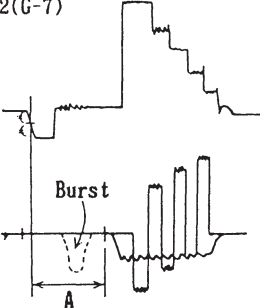
### 12-1-17. R-Y Carrier Balance Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 75% color-bar signal to the VIDEO IN connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• MODE: EE</li> </ul>	<p>TP4/DEC-42(C-11)</p> 	<p>RV4/DEC-42(A-7)</p> <p>TRIG: 1410 SYNC</p>

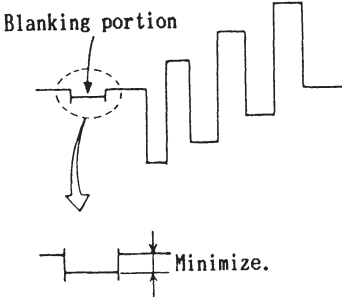
### 12-1-18. Decode Axis Phase Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 75% color-bar signal to the VIDEO IN connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• MODE: EE</li> </ul>	<p>TP2/DEC-42(D-10)</p> <p>R-Y</p> 	<p>RV7/DEC-42(C-4)</p> <p>TRIG: 1410 SYNC</p>

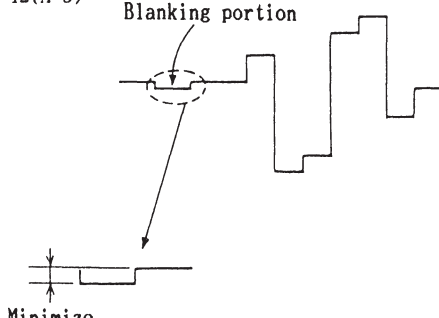
### 12-1-19. Blanking Width Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 75% color-bar signal to the VIDEO IN connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• MODE: EE</li> </ul>	CN113-19C/DEC-42(G-7) TP3/DEC-42(A-3)  A should be $8.6 \pm 0.1 \mu\text{sec}$ with the burst signal blanked.	RV512/DEC-42(G-5)  TRIG: 1410 SYNC

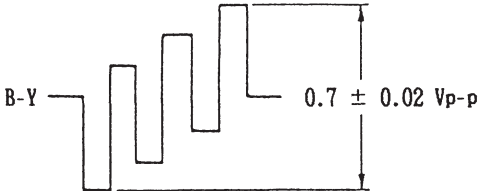
### 12-1-20. B-Y Blanking Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 75% color-bar signal to the VIDEO IN connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• MODE: EE</li> </ul>	TP3/DEC-42(A-3)  Minimize.	RV3/DEC-42(B-4)  TRIG: 1410 SYNC

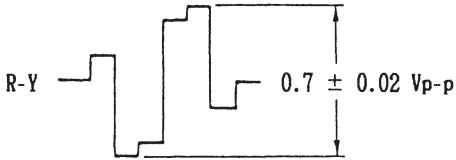
### 12-1-21. R-Y Blanking Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 75% color-bar signal to the VIDEO IN connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• MODE: EE</li> </ul>	TP4/DEC-42(A-3)  Minimize.	RV6/DEC-42(B-4)  TRIG: 1410 SYNC

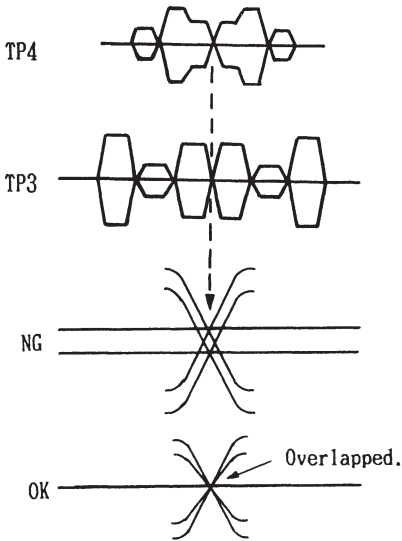
### 12-1-22. B-Y Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 75% color-bar signal to the VIDEO IN connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• MODE: EE</li> </ul>	<p>TP3/DEC-42(A-3)</p>  <p>Measured in the noise's center.</p>	<p>RV2/DEC-42(A-5)</p> <p>TRIG: 1410 SYNC</p>

### 12-1-23. R-Y Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 75% color-bar signal to the VIDEO IN connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• MODE: EE</li> </ul>	<p>TP4/DEC-42(B-3)</p>  <p>Measured in the noise's center.</p>	<p>RV5/DEC-42(A-5)</p> <p>TRIG: 1410 SYNC</p>


# 12-1-24. Composite C-C Delay Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 75% color-bar signal (REVERSE) to the VIDEO IN connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• MODE: EE</li> </ul> <p>• After adjustment is completed, set the signal generator's REVERSE signal to the former position to enter the FULL FIELD mode.</p>	<p>TP3/DEC-42(A-3) TP4/DEC-42(B-3)</p> 	<p>RV8/DEC-42(B-4)</p> <p>TRIG: 1410 SYNC</p>

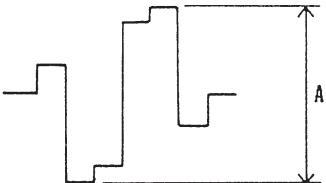
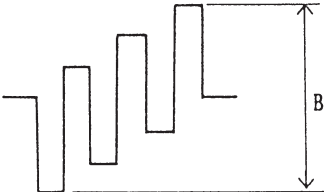
# 12-1-25. CTDM Clock AFC Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a component color-bar signal to the COMPONENT 2 IN connector.</li> <li>• INPUT SELECT sw: Y-R, B</li> <li>• MODE: EE</li> </ul>	<p>TP802/DEC-42(C-5)</p> <p>Measure the DC voltage A volt</p> <p>TP803/DEC-42(D-4)</p> <p>Measure the DC voltage B volt</p> <p><math>B = A - 50\text{mV}</math></p>	<p>LV801/DEC-42(D-3)</p> <p>TRIG: TP500/DEC-42(F-4)</p>

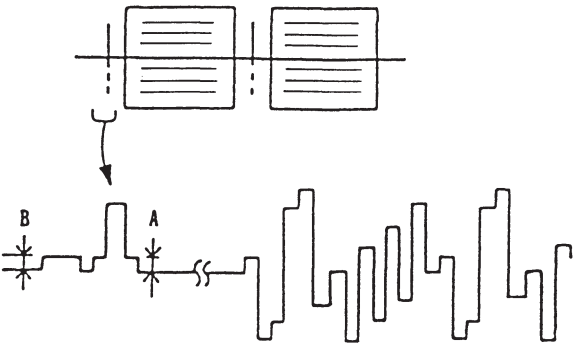
## 12-1-26. CTDM A/D REC DC Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a component color-bar signal to the COMPONENT 2 IN connector.</li> <li>• INPUT SELECT sw: Y-R, B</li> <li>• MODE: EE</li> </ul>	TP205/DEC-42(D-2)  $3,000 \pm 0.005 \text{ Vdc}$	 RV205/DEC-42(C-2)

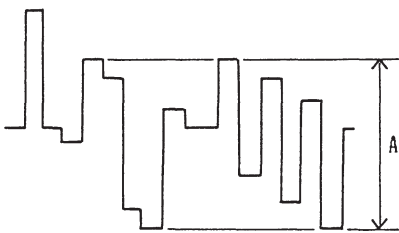
## 12-1-27. CTDM A/D Input Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a component color-bar signal to the COMPONENT 2 IN connector.</li> <li>• INPUT SELECT sw: Y-R, B</li> <li>• MODE: EE</li> </ul>	<p>TP201/DEC-42(D-2)</p>  <p><math>A = 1.30 \pm 0.01 V_{p-p}</math></p>	<p>RV203/DEC-42(D-2)</p> <p>TRIG: 1410 SYNC HD</p>
	<p>TP202/DEC-42(D-1)</p>  <p><math>B = 1.30 \pm 0.01 V_{p-p}</math></p>	<p>RV204/DEC-42(D-1)</p> <p>TRIG: 1410 SYNC HD</p>

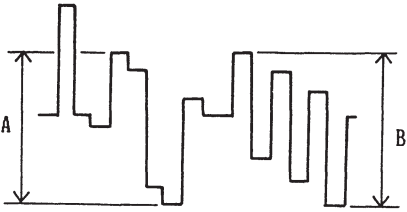
# 12-1-28. CTDM A/D Input DC Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Supply a component color-bar signal to the COMPONENT 2 IN connector.</li> <li>INPUT SELECT sw: Y-R, B</li> <li>MODE: EE</li> </ul>	TP203/DEC-42(G-1) Step 1 B-Y DC Adjustment  A = 5 mV or less	RV206/DEC-42(D-2)
	Step 2 R-Y DC Adjustment  B = 5 mV or less	RV207/DEC-42(D-2)  TRIG: 1410 SYNC HD

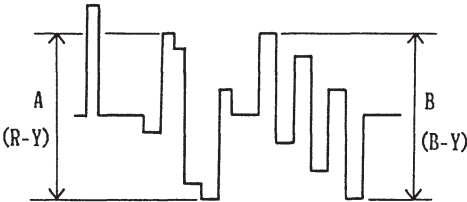
# 12-1-29. COMPONENT 2 Input Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Supply a component color-bar signal to the COMPONENT 2 IN connector.</li> <li>INPUT SELECT sw: Y-R, B</li> <li>MODE: EE</li> </ul>	TP19/MD-46(C-5)  A = 0.7 ± 0.01 Vp-p	RV412/DEC-42(H-1)  TRIG: 1410 SYNC HD

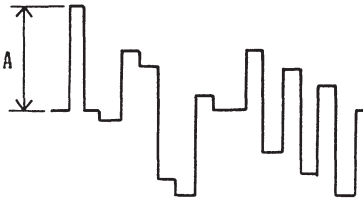
### 12-1-30. COMPONENT 1 Input Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a COMPONENT color-bar signal to the DUB/COMPONENT 1 IN connector.</li> <li>• INPUT SELECT sw: Y-R, B</li> <li>• COMPONENT select sw: DUB/COMPONENT 1</li> <li>• MODE: EE</li> <li>• After adjustment is completed, set COMPONENT select switch to the former position.</li> </ul>	<p>TP19/MD-46(C-5)</p>  <p><math>A = 0.7 \pm 0.01 \text{ Vp-p}</math></p>	<p>For A            ⌚RV201/DEC-42(A-2)            For B            ⌚RV202/DEC-42(A-1)</p> <p>TRIG: 1410 SYNC HD</p>

### 12-1-31. COMPOSITE Chroma Input Level Fine Adjustment

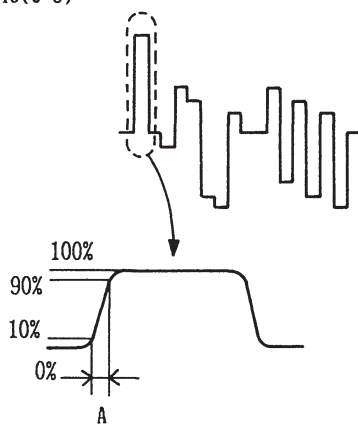
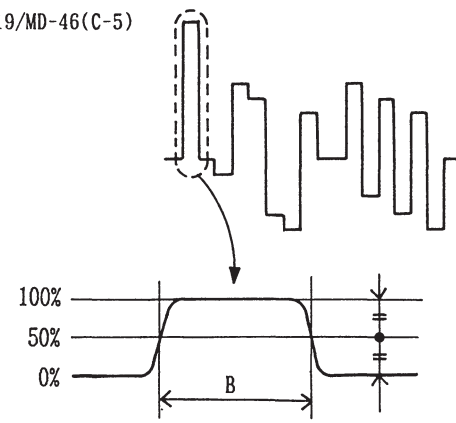
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 75% color-bar signal to the VIDEO IN connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• MODE: EE</li> </ul>	<p>TP19/MD-46(C-5)</p>  <p><math>A \text{ (R-Y)} : 0.7 \pm 0.01 \text{ Vp-p}</math>  <math>B \text{ (B-Y)} : 0.7 \pm 0.01 \text{ Vp-p}</math></p>	<p>(B-Y)            ⌚RV2/DEC-42(A-5)            (R-Y)            ⌚RV5/DEC-42(A-5)</p> <p>TRIG: 1410 SYNC</p>

### 12-1-32. B-Y/R-Y REF Sync Level Adjustment

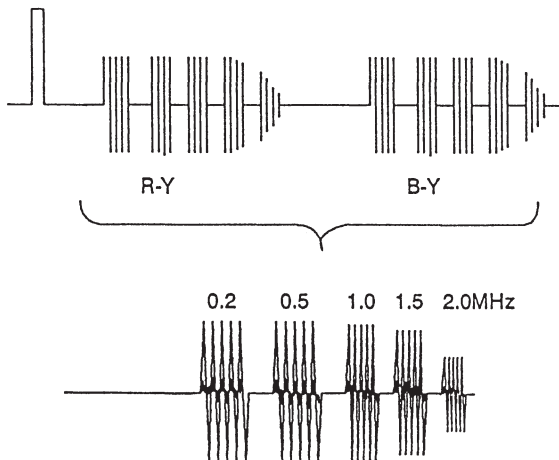
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a component color-bar signal to the COMPONENT 2 IN connector.</li> <li>• INPUT SELECT sw: Y-R, B</li> <li>• MODE: EE</li> </ul>	<p>TP19/MD-46(C-5)</p>  <p><math>A \text{ (Sync level)} = 0.73 \pm 0.01 \text{ Vp-p}</math></p>	<p>⌚RV405/DEC-42(H-2)</p> <p>TRIG: 1410 SYNC HD</p>



# 12-1-33. R-Y/B-Y REF Sync Adjustment

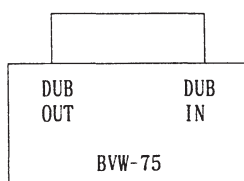
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a component color-bar signal to the COMPONENT 2 IN connector.</li> <li>• INPUT SELECT sw: Y-R, B</li> <li>• MODE: EE</li> </ul>	TP19/MD-46(C-5)  <p>100% 90% 10% 0%</p> <p>A</p> <p><math>A = 220 \pm 20 \text{ nsec}</math></p>	●LV401/DEC-42(J-2) <p>TRIG: 1410 SYNC HD</p>
	TP19/MD-46(C-5)  <p>100% 50% 0%</p> <p>B</p> <p><math>B = 1.9 \pm 0.05 \mu \text{sec}</math></p>	●RV505/DEC-42(D-7) <p>TRIG: 1410 SYNC HD</p>

### 12-1-34. CTDM Frequency Resonse Adjustment

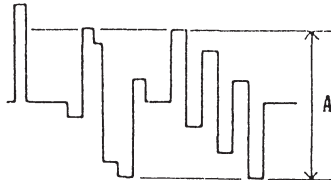
machine conditions for adjustment	specifications	adjustments										
<ul style="list-style-type: none"><li>• Supply a 60% multi burst signal to the COMPONENT 2 IN conector.</li><li>• INPUT SELECT sw: Y-R, B</li><li>• MODE: EE</li></ul>	<p>TP19/MD-46(D-5)</p>  <table><tr><th>Freq.</th><th>Spec.</th></tr><tr><td>0.2MHz</td><td>100%(Ref. )</td></tr><tr><td>0.5MHz</td><td>100 ± 5%</td></tr><tr><td>1.0MHz</td><td>100 ± 5%</td></tr><tr><td>1.5MHz</td><td>100 ± 10%</td></tr></table>	Freq.	Spec.	0.2MHz	100%(Ref. )	0.5MHz	100 ± 5%	1.0MHz	100 ± 5%	1.5MHz	100 ± 10%	<p>●CV403/DEC-42(H-2)</p> <p>TRIG: 1410 SYNC HD</p>
Freq.	Spec.											
0.2MHz	100%(Ref. )											
0.5MHz	100 ± 5%											
1.0MHz	100 ± 5%											
1.5MHz	100 ± 10%											

### 12-1-35. DUB CTDM Input Level Adjustment

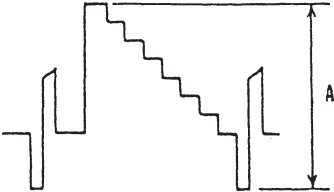
Dubbing cable



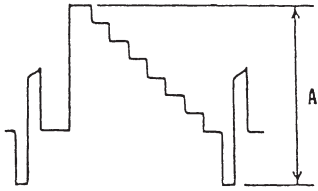
This Adjustment should be done after Sec. 12-5-17. C DUB Out Level Adjustment.

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Connect the DUB OUT and DUB IN connectors with a dubbing cable.</li> <li>Play back a 75% color-bar signal on alignment tape CR5-1B.</li> <li>INPUT SELECT sw: CTDM</li> <li>After adjustment is completed, disconnect the dubbing cable.</li> </ul>	<p>TP19/MD-46(D-5)</p>  <p><math>A = 0.7 \pm 0.01 V_{p-p}</math></p>	<p>●RV406/DEC-42(J-1)</p> <p>TRIG: TP500/DEC-42(F-4)</p>

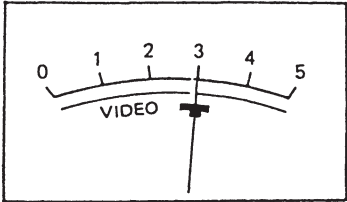
### 12-1-36. Component Output Y Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 100% component color-bar to the COMPONENT 2 IN connector.</li> <li>• INPUT SELECT sw: Y-R, B</li> <li>• MODE: EE</li> </ul>	<p>TP4/MD-46(C-3)</p>  <p><math>A = 1.0 \pm 0.02 \text{ Vp-p}</math></p>	<p>RV402/DEC-42(H-4)</p> <p>TRIG: 1410 SYNC HD</p>

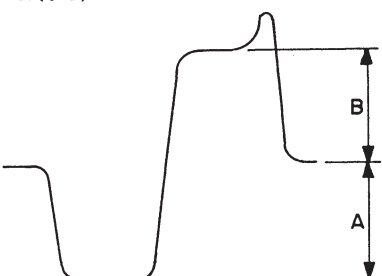
### 12-1-37. Composite Output Y Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 75% color-bar signal to the VIDEO IN connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• MODE: EE</li> </ul>	<p>TP4/MD-46(C-3)</p>  <p><math>A = 1.0 \pm 0.01 \text{ Vp-p}</math></p>	<p>RV407/DEC-42(H-6)</p> <p>TRIG: 1410 SYNC HD</p>

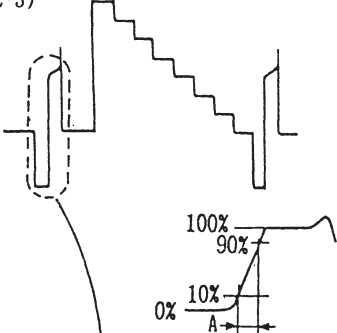
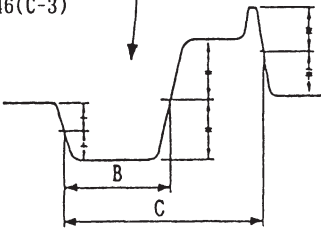
### 12-1-38. VIDEO/RF Meter Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 75% color-bar signal to the VIDEO IN connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• MODE: EE</li> </ul>	<p>VIDEO/RF METER</p>  <p>The pointer should be in the center of scale 3.</p>	<p>RV403/DEC-42(H-5)</p>

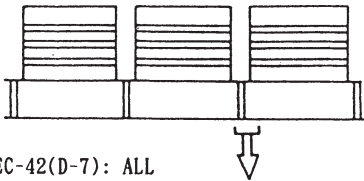
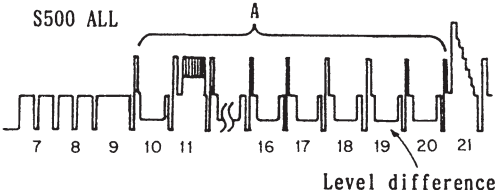
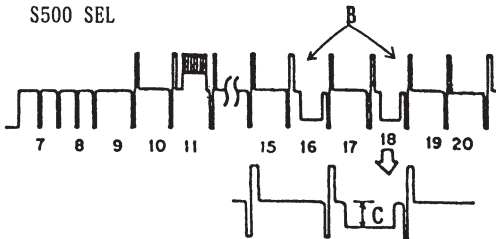
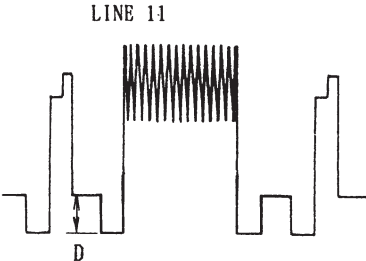
### 12-1-39. Y REF Sync Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a Y 50% flat field signal to the COMPONENT 2 IN connector.</li> <li>• INPUT SELECT sw: Y-R, B</li> <li>• MODE: EE</li> </ul>	<p>TP4/MD-46(C-3)</p>  <p>A = 100% reference B = 125.0 ± 2.5%</p>	<p>RV404/DEC-42(H-2)</p> <p>TRIG: TP500/DEC-42(F-4)</p>

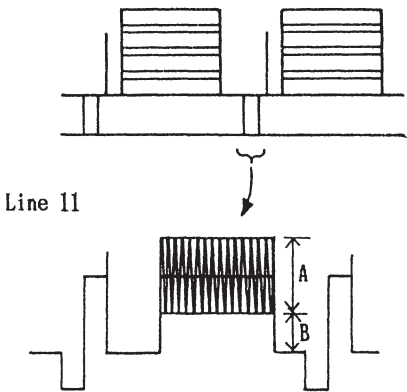
# 12-1-40. Y REF Sync Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a component color-bar signal to the COMPONENT 2 IN connector.</li> <li>• INPUT SELECT sw: Y-R, B</li> <li>• MODE: EE</li> </ul>	TP4/MD-46(C-3)  <p><math>A = 180 \pm 20 \text{ nsec}</math></p>	●LV400/DEC-42(J-3)  TRIG; TP500/DEC-42(F-4)
	TP4/MD-46(C-3)  <p> <math>B = 2.65 \pm 0.05 \mu\text{sec}</math>  <math>C = 5.0 \pm 0.1 \mu\text{sec}</math> </p>	(For B) ●RV502/DEC-42(E-5) (For C) ●RV503/DEC-42(E-5)  TRIG: TP500/DEC-42(F-4)

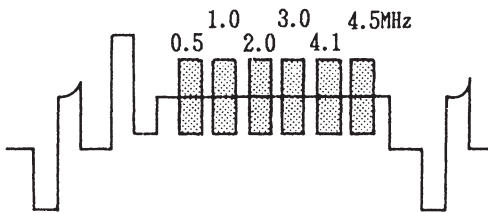
# 12-1-41. VITC/VISC Blanking Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 75% color-bar signal to the VIDEO IN connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• Set the VITC switch on the SY-64 board to ON.</li> <li>• MODE: EE</li> <li>• Turn S500/DEC-42 to ALL/SEL.</li> <li>• Fully turn RV408/DEC-42 counter-clockwise once.</li> </ul>	<p>TP402/DEC-42(H-4)</p>  <p>S500/DEC-42(D-7): ALL</p>  <p>Spec. 1 Level differences should appear at portion A (10 to 20 lines).</p> <p>S500/DEC-42(D-7): SEL</p>  <p>Spec. 2 Level differences should appear at portion B (VITC SELECTED LINES).</p> <p>Spec. 3 Level differences C should be <math>0 \pm 10</math> mV or less.</p> <p>Spec. 4</p>  <p>Level differences D (line 11) should be 10 mV or less.</p>	<p>RV408/DEC-42(J-4)</p> <p>RV411/DEC-42(J-4)</p> <p>TRIG: TP500/DEC-42(F-4)</p>

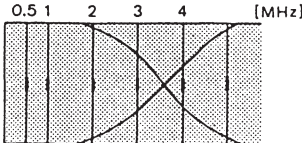
## 12-1-42. VISC Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 75% color-bar signal to the VIDEO IN connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• MODE: EE</li> </ul>	<p>TP402/DEC-42(H-3)</p>  <p>Line 11</p> <p><math>A = 286 \pm 2\% \text{ mVp-p}</math>  <math>B = 57 \pm 20 \text{ mV}</math></p>	<ul style="list-style-type: none"> <li>• For A  RV508/CF-36 on the DEC-42(D-7).</li> <li>• For B  RV509/CF-36 on the DEC-42(D-7).</li> </ul> <p>TRIG: TP500/DEC-42(F-4)</p>

## 12-1-43. COMPONENT Y Frequency Response Adjustment

machine conditions for adjustment	specifications	adjustments														
<ul style="list-style-type: none"><li>• Supply a 60% multi burst signal to the COMPONENT 2 IN connector.</li><li>• INPUT SELECT sw: Y-R, B</li><li>• MODE: EE</li></ul>	<p>TP1/MD-46(E-3)</p>  <table><thead><tr><th>Freq.</th><th>Spec.</th></tr></thead><tbody><tr><td>0.5MHz</td><td>100% (Ref. )</td></tr><tr><td>1.0MHz</td><td>100 ± 2%</td></tr><tr><td>2.0MHz</td><td>100 ± 2%</td></tr><tr><td>3.0MHz</td><td>100 ± 2%</td></tr><tr><td>4.1MHz</td><td>100 ± 2%</td></tr><tr><td>4.5MHz</td><td>100 ± 2%</td></tr></tbody></table>	Freq.	Spec.	0.5MHz	100% (Ref. )	1.0MHz	100 ± 2%	2.0MHz	100 ± 2%	3.0MHz	100 ± 2%	4.1MHz	100 ± 2%	4.5MHz	100 ± 2%	<p>CV402/DEC-42(J-3)</p> <p>TRIG: TP500/DEC-42(F-4)</p>
Freq.	Spec.															
0.5MHz	100% (Ref. )															
1.0MHz	100 ± 2%															
2.0MHz	100 ± 2%															
3.0MHz	100 ± 2%															
4.1MHz	100 ± 2%															
4.5MHz	100 ± 2%															

12-1-44. COMPOSITE Y Frequency Response Adjustment

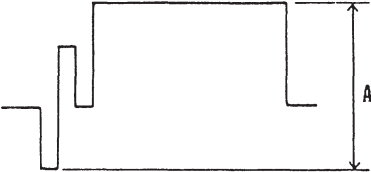
machine conditions for adjustment	specifications	adjustments												
<ul style="list-style-type: none"><li>• Supply a V sweep signal to the VIDEO IN connector.</li><li>• INPUT SELECT sw: COMPOSITE</li><li>• MODE: EE</li></ul>	<p>TP1/MD-46(E-3)</p> <div></div> <table><tr><th>Freq.</th><th>Spec.</th></tr><tr><td>0.5MHz</td><td>100 %(Ref. )</td></tr><tr><td>1 MHz</td><td>100 ± 4 %</td></tr><tr><td>2 MHz</td><td>96 ± 4 %</td></tr><tr><td>3 MHz</td><td>100 ± 4 %</td></tr><tr><td>4 MHz</td><td>100 ± 4 %</td></tr></table>	Freq.	Spec.	0.5MHz	100 %(Ref. )	1 MHz	100 ± 4 %	2 MHz	96 ± 4 %	3 MHz	100 ± 4 %	4 MHz	100 ± 4 %	<p>●CV401/MD-46(H-5)</p> <p>TRIG: TP500/DEC-42(F-4)</p>
Freq.	Spec.													
0.5MHz	100 %(Ref. )													
1 MHz	100 ± 4 %													
2 MHz	96 ± 4 %													
3 MHz	100 ± 4 %													
4 MHz	100 ± 4 %													



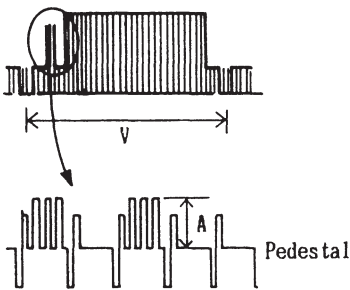


## 12-2. MD-46 BOARD ADJUSTMENT

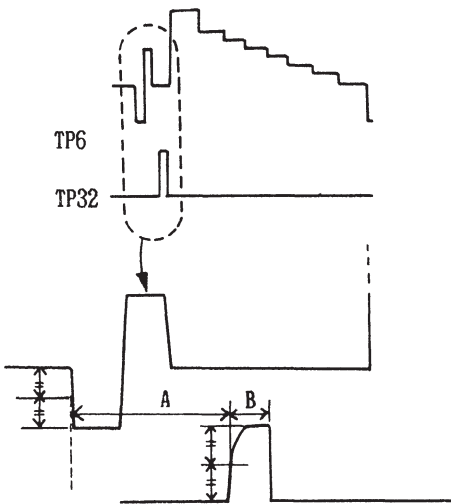
### 12-2-1. Y Input Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 100% flat field signal to the DUB/COMPONENT 1 IN connector.</li> <li>• INPUT SELECT sw: Y-R, B</li> <li>• MODE: EE</li> <li>• COMPONENT select switch: DUB/COMPONENT 1</li> <li>• After adjustment is completed, set COMPONENT select switch to the former position.</li> </ul>	<p>TP4/MD-46(C-3)</p>  <p><math>A = 1.0 \pm 0.02 \text{ Vp-p}</math></p>	<p>RV50/MD-46(D-3)</p> <p>TRIG: TP32/MD-46(F-3)</p>

### 12-2-2. VITC Level Adjustment

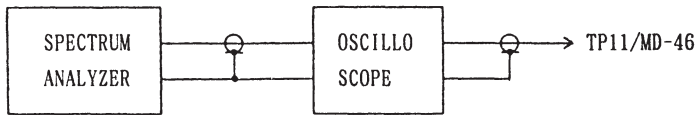
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a 75% color-bar to the DUB/COMPONENT 1 IN connector.</li> <li>• MODE: EE</li> <li>• COMPONENT select switch: DUB/COMPONENT 1</li> <li>• After adjustment is completed, set COMPONENT select switch to the former position.</li> </ul>	<p>TP4/MD-46(C-3)</p>  <p><math>A \text{ (VITC level)} = 0.57 \pm 0.02 \text{ Vp-p}</math></p>	<p>RV1/MD-46(D-2)</p> <p>TRIG: 1410 SYNC(VD)</p>

### 12-2-3. Y Clamp Pulse Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a color-bar signal to the COMPONENT 2 IN connector.</li> <li>• MODE: EE</li> </ul>	<p>TP6/MD-46(C-3) TP32/MD-46(F-3)</p>  <p><math>A = 6.0 \pm 0.1 \mu\text{sec}(\text{timing})</math> <math>B = 2.0 \pm 0.1 \mu\text{sec}(\text{width})</math></p>	<ul style="list-style-type: none"> <li>• Timing RV6/MD-46(G-3)</li> <li>• Width RV7/MD-46(F-3)</li> </ul> <p>TRIG: 1410 SYNC(HD)</p>

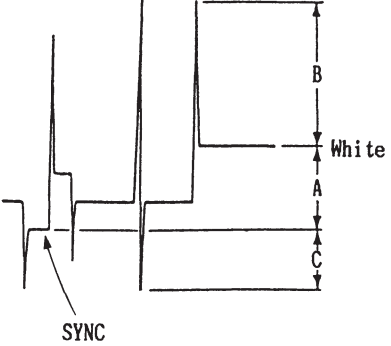
## 12-2-4. Y Deviation Adjustment

### 【Connection】

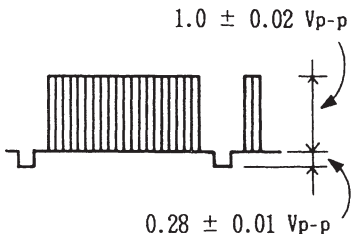

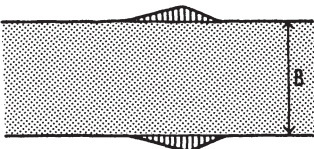
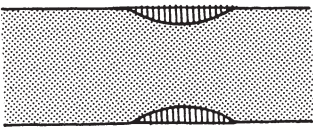



machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a Pulse &amp; bar signal to the DUB/COMPONENT 1 IN connector.</li> <li>• MODE: EE</li> </ul>	<p>TP11/MD-46(B-1)</p> <p>dB</p> <p>5.7 6.271 7.7 [MHz]</p> <p>• Pedestal carrier adjustment. Set the peak level on the center to 6.27MHz.</p> <p>• Deviation adjustment Set the gap between two peak to 1.429MHz.</p>	<ul style="list-style-type: none"> <li>• Pedestal RV22/MD-46(A-2)</li> <li>• Deviation RV3/MD-46(A-3)</li> </ul>
<p>Step 2</p> <ul style="list-style-type: none"> <li>• Insert the BCT-20G cassette.</li> <li>• MODE: EE</li> </ul>	<p>dB</p> <p>4.4 4.971 6.4 [MHz]</p> <p>• Pedestal carrier adjustment Set the peak level on the center to 4.971MHz.</p> <p>• Deviation adjustment Set the gap between two peak to 1.429MHz.</p>	<ul style="list-style-type: none"> <li>• Pedestal RV42/MD-46(A-2)</li> <li>• Deviation RV54/MD-46(C-3)</li> </ul>

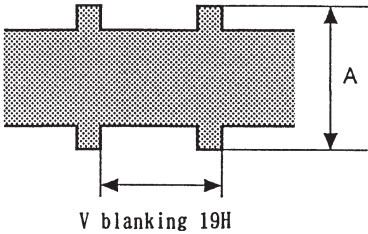
## 12-2-5. Y White/Dark Clip Adjustment

machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a pulse &amp; bar signal to the COMPONENT 2 IN connector.</li> <li>• Connect a mylar capacitor (330PF) between TP34 (C-1) and TP35 (C-1) on the MD-46 board.</li> <li>• Insert the BCT-20G cassette.</li> <li>• MODE: EE</li> </ul>	<p>TP8/MD-46(B-3)</p>  <p>A = 100 % reference  B = 150 ± 2.5% (white clip)  C = 65 ± 2.5% (dark clip)</p>	<ul style="list-style-type: none"> <li>• White clip  RV4/MD-46(C-2)</li> <li>• Dark clip  RV5/MD-46(D-2)</li> </ul>
<p>Step 2</p> <ul style="list-style-type: none"> <li>• Insert the BCT-20M cassette.</li> <li>• MODE: EE</li> </ul> <p>• After adjustment is completed, remove the capacitor.</p>	<p>A = 100 % reference  B = 150 ± 2.5% (white clip)  C = 100 ± 2.5% (dark clip)</p>	<ul style="list-style-type: none"> <li>• White clip  RV44/MD-46(C-2)</li> <li>• Dark clip  RV45/MD-46(D-2)</li> </ul> <p>TRIG: TP4/MD-46(D-3)</p>

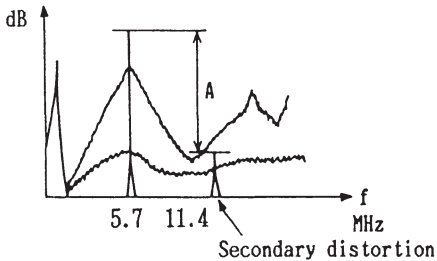
# 12-2-6. Y-REC HF Slice Level Adjustment

machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• INPUT SELECT sw: CTDM</li> <li>• Supply a 140% line sweep signal to the DUB/COMPONENT 1 IN connector.</li> <li>• MODE: EE</li> </ul> <p>• 140% line sweep signal (0.5~8MHz) (TP4/MD-46)</p>  <p>Note: Use the Shibasoku VS12AX Video Sweep Generator or the equivalent.</p>	<p>TP3/MD-46(B-2)</p>  <p><math>A = 30 \pm 2 \text{ mVp-p}</math></p> <p>TP10/MD-46(A-1)</p>  <p><math>B = 500 \pm 20 \text{ mVp-p}</math></p> <p>Note: The waveform at TP10 shown below cannot be accepted.</p> 	<ul style="list-style-type: none"> <li>• METAL HF SLICE LEVEL RV34/MD-46(C-2)</li> <li>• HF OUT LEVEL RV38/MD-46(C-2)</li> </ul> <p>TRIG: EXT. SYNC (HD)</p>
<p>Step 2</p> <ul style="list-style-type: none"> <li>• Insert the BCT-20G cassette.</li> <li>• MODE: EE</li> </ul>	<p>TP3/MD-46(B-2)</p>  <p><math>C = 80 \pm 2 \text{ mVp-p}</math></p>	<ul style="list-style-type: none"> <li>• OXIDE HF SLICE LEVEL RV33/MD-46(C-2)</li> </ul>

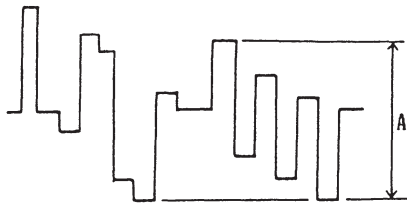
## 12-2-7. Y Reference Pulse Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a 50/50/50 flat field signal to the COMPONENT 2 IN connector.</li> <li>• Set S1 on MD-46 board to ON.</li> <li>• MODE: EE</li> <li>• Using S2 on the MD-46 board, set the gate timing to 19H during V blanking period.</li> <li>• After adjustment is completed, set S1 on the MD-46 board to OFF.</li> </ul>	<p>TP11/MD-46(A-1)</p>  <p><math>A = 0.44 \pm 0.04 \text{ Vp-p}</math></p>	<p>RV55/MD-46(C-1)</p> <p>TRIG: EXT. SYNC(VD)</p>

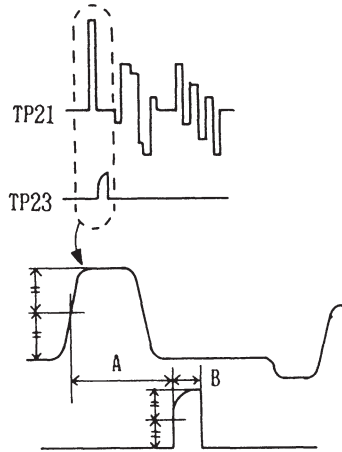
## 12-2-8. Y Modulator Balance Adjustment

machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• Never extend the MD-46 board using an extension board.</li> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a 50/50/50 flat field signal to the COMPONENT 2 IN connector.</li> <li>• Insert the BCT-20G cassette.</li> <li>• MODE: EE</li> <li>• Connect a spectrum analyzer to the OUT terminal of the oscilloscope.</li> </ul>	<p>TP1/RP-29(Y)(E-3)</p>  <p>Minimize the secondary distortion.</p> <p><math>A \geq 44\text{dB}</math></p>	<p>RV8/MD-46(A-2)</p>
<p>Step 2</p> <ul style="list-style-type: none"> <li>• Insert the BCT-20M cassette.</li> <li>• MODE: EE</li> </ul>	<p>TP1/RP-29(Y)(E-3)</p> <p>Minimize the secondary distortion.</p> <p><math>A \geq 44\text{dB}</math></p> <p>When the specification is not satisfied, perform Step 1.</p>	

### 12-2-9. C Input Level Adjustment

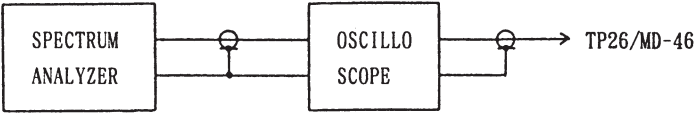
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a 75% color-bar signal to the DUB/COMPONENT 1 IN connector.</li> <li>• MODE: EE</li> </ul>	<p>TP19/MD-46(C-5)</p>  <p><math>A = 0.70 \pm 0.01V_{p-p}</math></p>	<p>RV51/MD-46(D-5)</p> <p>TRIG: TP33/MD-46(F-4)</p>

### 12-2-10. C Clamp Pulse Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a 75% color-bar signal to the COMPONENT 2 IN connector.</li> <li>• MODE: EE</li> </ul>	<p>TP21/MD-46(C-5) TP33/MD-46(F-4)</p>  <p><math>A = 2.4 \pm 0.1 \mu\text{sec (Timing)}</math> <math>B = 0.6 \pm 0.1 \mu\text{sec (Width)}</math></p>	<ul style="list-style-type: none"> <li>• Timing RV16/MD-46(G-4)</li> <li>• Width RV17/MD-46(F-4)</li> </ul> <p>TRIG: 1410 SYNC(HD)</p>

12-2-11. C Deviation Adjustment

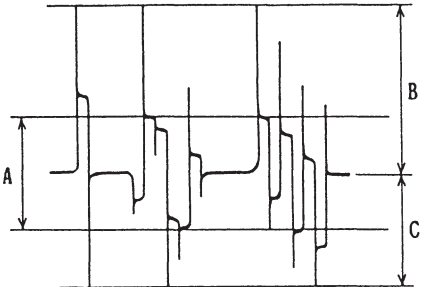
【Connection】



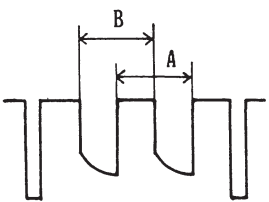
machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"><li>• INPUT SELECT sw: Y-R, B</li><li>• Supply a Pulse &amp; bar signal to the COMPONENT 2 IN connector.</li><li>• Insert the BCT-20M cassette.</li><li>• MODE: EE</li></ul>	<p>TP26/MD-46(B-3)</p> <p>The graph shows a frequency response curve with three distinct peaks. The x-axis is labeled 'MHz' and has markers at 4.8MHz, 5.3MHz, and 5.8MHz. The y-axis is labeled 'dB'. Vertical dashed lines extend from the peaks at 4.8MHz and 5.8MHz to the x-axis. The peak at 5.3MHz is the highest.</p> <p>Pedestal carrier adjustment: Set the center peak to 5.3MHz.</p> <p>Deviation adjustment: Set the gap between two peaks (4.8MHz and 5.8MHz) to 1MHz.</p>	<ul style="list-style-type: none"><li>• Pedestal ●RV23/MD-46(A-4)</li><li>• Deviation ●RV13/MD-46(A-5)</li></ul>
<p>Step 2</p> <ul style="list-style-type: none"><li>• Insert the BCT-20G cassette.</li><li>• MODE: EE</li></ul>	<p>Pedestal carrier adjustment: Set the center peak to 4.5MHz.</p>	<ul style="list-style-type: none"><li>●RV43/MD-46(A-4)</li></ul>



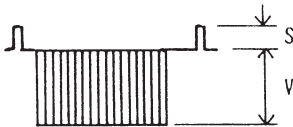

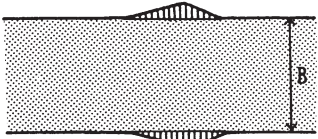
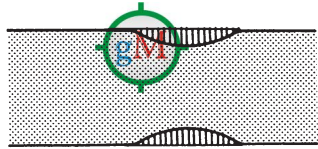

### 12-2-12. C White/Dark Clip Adjustment

machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• INPUT SELECT sw: CTDM</li> <li>• Supply a 75% color-bar signal to the DUB/COMPONENT 1 IN connector.</li> <li>• Connect a mylar capacitor (330PF) between TP36 and TP37 on the MD-46 board.</li> <li>• MODE: EE</li> </ul>	<p>TP23/MD-46(B-5)</p>  <p>A = 100% reference B = 305 ± 2.5% (high clip) C = 230 ± 2.5% (low clip)</p>	<ul style="list-style-type: none"> <li>• High clip RV14/MD-46(C-5)</li> <li>• Low clip RV47/MD-46(C-4)</li> </ul>
<p>Step 2</p> <ul style="list-style-type: none"> <li>• Insert the BCT-20G cassette.</li> <li>• MODE: EE</li> <li>• After adjustment is completed, remove the capacitor.</li> </ul>	<p>A = 100 % reference B = 305 ± 2.5% (high clip) C = 175 ± 2.5% (low-clip)</p>	<ul style="list-style-type: none"> <li>• High clip RV46/MD-46(C-4)</li> <li>• Low clip RV15/MD-46(C-5)</li> </ul> <p>TRIG: TP19/MD-46(C-5)</p>

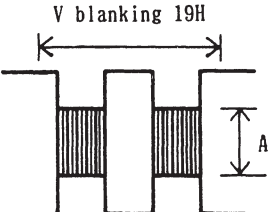
### 12-2-13. C Reference Pulse Timing Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a color-bar signal to the COMPONENT 2 IN connector.</li> <li>• S1/MD-46: ON</li> <li>• MODE: EE</li> <li>• After adjustment is completed, set S1 on the MD-46 board to OFF.</li> </ul>	<p>TP312/DM-56(J-4)</p>  <p>A = 32 ± 1 μsec B = 32 ± 1 μsec</p>	<ul style="list-style-type: none"> <li>• For A RV57/MD-46(F-2)</li> <li>• For B RV58/MD-46(G-2)</li> </ul> <p>TRIG: EXT. SYNC(VD)</p>

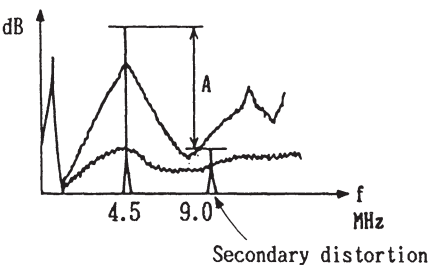
# 12-2-14. C-REC HF Slice Level Adjustment

machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>INPUT SELECT sw: CTDM</li> <li>Supply a 1 Vp-p line sweep signal to the DUB/COMPONENT 1 IN connector.</li> <li>Insert the BCT-20M cassette.</li> <li>MODE: EE</li> <li>1 Vp-p line sweep signal (TP19/MD-46)</li> </ul>  <p> <math>S = 0.28 \pm 0.01 \text{ Vp-p}</math>  <math>V = 1.0 \pm 0.02 \text{ Vp-p}</math> </p> <p>Note: Use the Shibasoku VS12AX Video Sweep Generator or the equivalent.</p>	<p>TP18/MD-46(B-5)</p>  <p> <math>A = 30 \pm 4 \text{ mVp-p}</math> </p> <p>TP25/MD-46(A-4)</p>  <p> <math>B = 500 \pm 20 \text{ mVp-p}</math> </p> <p>Note: The waveform at TP25 shown below cannot be accepted.</p> 	<ul style="list-style-type: none"> <li>METAL HF SLICE LEVEL RV35/MD-46(C-4)</li> <li>HF OUT LEVEL RV39/MD-46(C-4)</li> </ul> <p>TRIG: EXT. SYNC(HD)</p>
<p>Step 2</p> <ul style="list-style-type: none"> <li>Insert the BCT-20G cassette.</li> <li>MODE: EE</li> </ul>	<p>TP18/MD-46(B-5)</p>  <p> <math>C = 30 \pm 4 \text{ mVp-p}</math> </p>	<ul style="list-style-type: none"> <li>OXIDE HF SLICE LEVEL RV37/MD-46(B-4)</li> </ul>

### 12-2-15. C Reference Pulse Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a 50/50/50 flat field signal to the COMPONENT 2 IN connector.</li> <li>• S1/MD-46: ON</li> </ul> <p>• After adjustment is completed, set S1 on the MD-46 board to OFF.</p>	<p>TP26/MD-46(B-4)</p>  <p><math>A = 0.44 \pm 0.02 V_{p-p}</math></p>	<p>RV56/MD-46(D-4)</p> <p>TRIG: EXT. SYNC(VD)</p>

### 12-2-16. C Modulator Balance Adjustment

machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• Never extend the MD-46 board using an extension board.</li> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a pedestal level signal to the COMPONENT 2 IN connector.</li> <li>• Insert the BCT-20G cassette.</li> <li>• MODE: EE</li> <li>• Connect a spectrum analyzer to the OUT terminal of the oscilloscope.</li> </ul>	<p>TP101/RP-29(C)(E-3)</p>  <p>Minimize the secondary distortion.</p> <p><math>A \geq 44\text{dB}</math></p>	<p>RV18/MD-46(A-5)</p>
<p>Step 2</p> <ul style="list-style-type: none"> <li>• Insert the BCT-20M cassette.</li> <li>• MODE: EE</li> </ul>	<p>TP101/RP-29(C)(E-3)</p> <p><math>A \geq 44\text{dB}</math></p> <p>When the specification is not satisfied, perform Step 1.</p>	

## 1 2 - 3. RP - 2 9 (Y) BOARD ADJUSTMENT

The RP-29 (Y) board adjustment is as follows:

1 2 - 3 - 2 Y-Metal REC Current and REC RF Secondary Distortion Adjustment (RV1, RV3, RV5, and RV6)

↓

1 2 - 3 - 3 Y-Oxide REC Current Adjustment (RV2 and RV4)

↓

1 2 - 3 - 4 Y-REC RF Frequency Response Adjustment (Steps 1 and 2) (RV7 and RV9)

↓

1 2 - 3 - 2 Y-Metal REC Current and REC RF Secondary Distortion Adjustment (Check)

↓

1 2 - 3 - 4 Y-REC RF Frequency Response Adjustment (Step 3) (RV8 and RV10)

↓

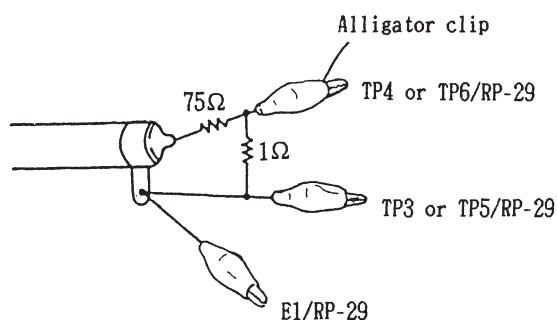
1 2 - 3 - 3 Y-Oxide REC Current Adjustment (Check)

↓

1 2 - 3 - 5 Y-OA Frequency Response Check

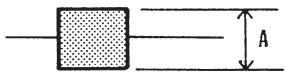
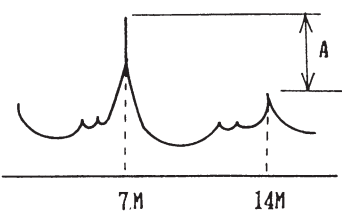
# 12-3-1. Y-PB RF Frequency Response Adjustment

- When connecting a network analyzer, prepare the following cable.

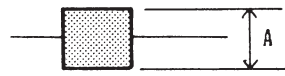
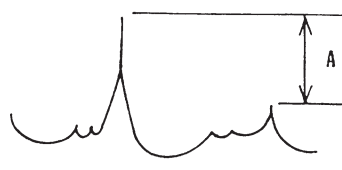


machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>Remove SP1(C-3) on the RP-29(Y) board.</li> <li>Set the network analyzer output to -20dB.</li> <li>Supply the network analyzer output to TP4(C-3) (GND; TP3(C-3) on the RP-29(Y) board.</li> <li>MODE: EE</li> </ul> <p>• After adjustment is completed, insert SP1.</p>	<p>TP7/RP-29(Y)(A-4) (GND: E1)</p> <p>MAG. <math>A = -4 \pm 1 \text{ dB}</math> (Level difference between 0MHz and 10MHz)</p> <p>DLY <math>B \leq 20 \text{ nsec}</math> (Phase of 5MHz to 14MHz)</p>	<p>CH-A: RV11/RP-29(Y)(B-3)</p>
<p>Step 2</p> <ul style="list-style-type: none"> <li>Remove SP2(C-1) on the RP-29(Y) board.</li> <li>Supply the network analyzer output to TP6(C-1) (GND; TP5(C-2) on the RP-29(Y) board.</li> </ul> <p>• After adjustment is completed, insert SP2.</p>	<p>TP8/RP-29(Y)(A-2) (GND: E1)</p> <p><math>A = -4 \pm 1 \text{ dB}</math> (Level difference between 0MHz and 10MHz)</p> <p><math>B \leq 20 \mu \text{ sec}</math> (Phase of 0MHz to 10MHz)</p>	<p>CH-B: RV12/RP-29(Y)(D-4)</p>

### 12-3-2. Y-Metal REC Current and REC RF Secondary Distortion Adjustment

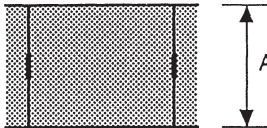
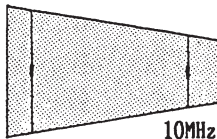
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Remove SP1(C-3) and SP2(C-2) on the RP-29(Y) board.</li> <li>Using a shorting clips, short between TP3 and TP4, and TP5 and TP6.</li> <li>INPUT SELECT sw: Y-R, B</li> <li>Supply a 50/50/50 flat field signal to the COMPONENT 2 IN connector.</li> <li>Insert the BCT-20M cassette.</li> <li>MODE: REC</li> </ul> <p>• After adjustment is completed, remove the shorting clips and insert SP1(C-3) and SP2(C-2).</p>	<p>CH-A: TP3-TP4/RP-29(Y)(C-3)(C-3) CH-B: TP5-TP6/RP-29(Y)(C-2)(C-1)</p> <p>Using a current probe</p>  <p><math>70 \pm 2\text{mA}</math></p> <p>Using a spectrum analyzer</p>  <p>7M 14M</p> <p>Minimize 14MHz. (A <math>\geq 40\text{ dB}</math>)</p>	<ul style="list-style-type: none"> <li>Level adjustment CH-A: RV1/RP-29(Y)(D-3) CH-B: RV3/RP-29(Y)(D-1)</li> <li>Secondary distortion adjustment CH-A: RV5/RP-29(Y)(D-3) CH-B: RV6/RP-29(Y)(D-1)</li> </ul> <p>TRIG: TP26/DM-56(B-1)</p>

### 12-3-3. Y-Oxide REC Current Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Remove SP1(C-3) and SP2(C-2) on the RP-29(Y) board.</li> <li>Using a shorting clips, short between TP3 and TP4, and TP5 and TP6.</li> <li>INPUT SELECT sw: Y-R, B</li> <li>Supply a 50/50/50 flat field signal to the COMPONENT 2 IN connector.</li> <li>Insert the BCT-20G cassette.</li> <li>MODE: REC</li> </ul> <p>• After adjustment is completed, remove the shorting clips and insert SP1(C-3) and SP2(C-2).</p>	<p>TP3-TP4/RP-29(Y)(C-3)(C-3) TP5-TP6/RP-29(Y)(C-2)(C-1)</p> <p>Using a current probe</p>  <p><math>A = 40 \pm 10\text{mA}</math></p> <p>Using a spectrum analyzer</p>  <p>5.7M 11.4M</p> <p>A <math>\geq 40\text{ dB}</math> Check that A satisfies the specification.</p>	<p>CH-A: RV2/RP-29(Y)(D-4) CH-B: RV4/RP-29(Y)(D-2)</p> <p>TRIG: TP26/DM-56(B-1)</p>

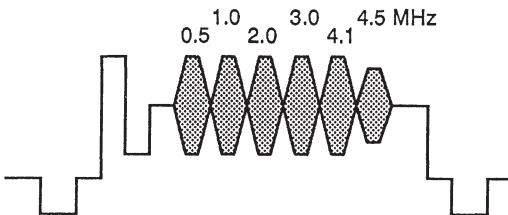
# 12-3-4. Y-REC RF Frequency Response Adjustment

• Before performing this adjustment, perform Sec. 12-5.

machine conditions for adjustment	specifications	adjustments						
<p>Step 1</p> <ul style="list-style-type: none"><li>• Supply a sweep signal to TP2(E-4) on the RP-29(Y) board(GND: TP1(E-3) and E1(E-3) on the RP-29(Y) board.)</li><li>• Remove SP1(C-3) and SP2(C-2) on the RP-29(Y) board.</li><li>• Using a shorting clips, short between TP3 and TP4, and TP5 and TP6.</li></ul>	<p>TP2/RP-29(Y)(E-4)</p> <p>Sweep signal level setting</p> <div><p>2MHz                      10MHz</p><p>A = 0.5V ± 0.05 Vp-p</p></div>	<p>Level control/sweep generator</p>						
<p>Step 2</p> <ul style="list-style-type: none"><li>• Insert the BCT-20M cassette.</li><li>• MODE: REC</li></ul>	<p>CH-A: TP3-TP4/RP-29(Y)(C-3)(C-3)</p> <p>CH-B: TP5-TP6/RP-29(Y)(C-2)(C-1)</p> <p>Using a current probe</p> <div><p>2 MHz                      10MHz</p><table border="1"><thead><tr><th>Freq.</th><th>Level</th></tr></thead><tbody><tr><td>2 MHz</td><td>100 % Ref.</td></tr><tr><td>10MHz</td><td>60 ± ½ %</td></tr></tbody></table></div>	Freq.	Level	2 MHz	100 % Ref.	10MHz	60 ± ½ %	<p>CH-A:</p> <p>⦿RV7/RP-29(Y)(C-4)</p> <p>CH-B:</p> <p>⦿RV9/RP-29(Y)(C-2)</p>
Freq.	Level							
2 MHz	100 % Ref.							
10MHz	60 ± ½ %							
<p>Step 3</p> <ul style="list-style-type: none"><li>• Insert the BCT-20G cassette.</li><li>• MODE: REC</li></ul>	<p>CH-A: TP3-TP4/RP-29(Y)(C-3)(C-3)</p> <p>CH-B: TP5-TP6/RP-29(Y)(C-2)(C-1)</p> <table border="1"><thead><tr><th>Freq.</th><th>Level</th></tr></thead><tbody><tr><td>2 MHz</td><td>100 % Ref.</td></tr><tr><td>10MHz</td><td>65 ± ⅔ %</td></tr></tbody></table>	Freq.	Level	2 MHz	100 % Ref.	10MHz	65 ± ⅔ %	<p>CH-A:</p> <p>⦿RV8/RP-29(Y)(C-4)</p> <p>CH-B:</p> <p>⦿RV10/RP-29(Y)(C-2)</p> <p>TRIG: TP26/DM-56(B-1)</p>
Freq.	Level							
2 MHz	100 % Ref.							
10MHz	65 ± ⅔ %							
<p>Step 4</p> <ul style="list-style-type: none"><li>• After adjustment is completed, remove the shorting clips and insert SP1 and SP2.</li></ul>	<p>Check that the secondary distortion, recording current, and PB frequency response satisfy the specification. When the specification is not satisfied, readjust Sections 12-3-2 through 12-3-4.</p>							

# 12-3-5. Y-OA Frequency Response Check

• Before performing this adjustment, perform Sec. 12-5.

machine conditions for adjustment	specifications	adjustments														
<p>Step 1</p> <ul style="list-style-type: none"><li>• INPUT SELECT sw: Y-R, B</li><li>• Supply a multi burst signal to the COMPONENT 2 IN connector.</li><li>• Insert the BCT-20M cassette.</li><li>• MODE: REC/PB</li></ul>	<p>COMPONENT 2 OUT</p>  <table><thead><tr><th>Freq.</th><th>Level</th></tr></thead><tbody><tr><td>0.5MHz</td><td>100 % Ref.</td></tr><tr><td>1.0MHz</td><td>100 ± 4 %</td></tr><tr><td>2.0MHz</td><td>100 ± 6 %</td></tr><tr><td>3.0MHz</td><td>100 ± 6 %</td></tr><tr><td>4.1MHz</td><td>96 ± 4 %</td></tr><tr><td>4.5MHz</td><td>80 ±10%</td></tr></tbody></table> <p>When the specification is not satisfied, perform Step 3.</p>	Freq.	Level	0.5MHz	100 % Ref.	1.0MHz	100 ± 4 %	2.0MHz	100 ± 6 %	3.0MHz	100 ± 6 %	4.1MHz	96 ± 4 %	4.5MHz	80 ±10%	
Freq.	Level															
0.5MHz	100 % Ref.															
1.0MHz	100 ± 4 %															
2.0MHz	100 ± 6 %															
3.0MHz	100 ± 6 %															
4.1MHz	96 ± 4 %															
4.5MHz	80 ±10%															
<p>Step 2</p> <ul style="list-style-type: none"><li>• Insert the BCT-20G cassette.</li><li>• MODE: REC/PB</li><li>• DT SELECT sw: OFF</li></ul>	<p>COMPONENT 2 OUT</p> <table><thead><tr><th>Freq.</th><th>Level</th></tr></thead><tbody><tr><td>0.5MHz</td><td>100 % Ref.</td></tr><tr><td>1.0MHz</td><td>100 ± 6 %</td></tr><tr><td>2.0MHz</td><td>100 ± 6 %</td></tr><tr><td>3.0MHz</td><td>90 ±10%</td></tr><tr><td>4.0MHz</td><td>80 ±10%</td></tr></tbody></table> <p>When the specification is not satisfied, perform Step 3.</p>	Freq.	Level	0.5MHz	100 % Ref.	1.0MHz	100 ± 6 %	2.0MHz	100 ± 6 %	3.0MHz	90 ±10%	4.0MHz	80 ±10%			
Freq.	Level															
0.5MHz	100 % Ref.															
1.0MHz	100 ± 6 %															
2.0MHz	100 ± 6 %															
3.0MHz	90 ±10%															
4.0MHz	80 ±10%															





## 12-4. RP-29 (C) BOARD ADJUSTMENT

When adjusting the RP-29(C) board, remove the AFM-1 board.

The RP-29(C) board adjustments are as follows:

12-4-2 C-Metal REC Current and REC RF Secondary Distortion Adjustment (RV101, RV103, RV105, RV106)

↓

12-4-3 C-Oxide REC Current Adjustment (RV102, RV104)

↓

12-4-4 C-REC RF Frequency Response Adjustment (Steps 1 and 2) (RV107, RV109)

↓

12-4-2 C-Metal REC and REC RF Secondary Distortion Adjustment (Check)

↓

12-4-4 C-REC RF Frequency Response Adjustment (Step 3) (RV108, RV110)

↓

12-4-3 C-Oxide REC Current Adjustment (Check)

↓

12-4-5 C-OA Frequency Response Check

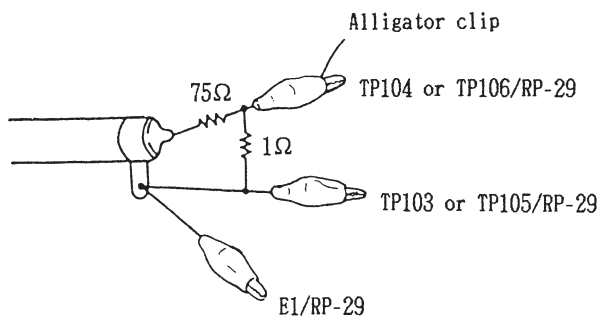
(When Section 12-4-5 is not satisfied, readjust Section 12-4-2.)

↓

12-4-6 Crosstalk Adjustment

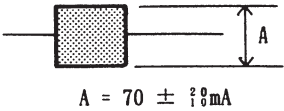
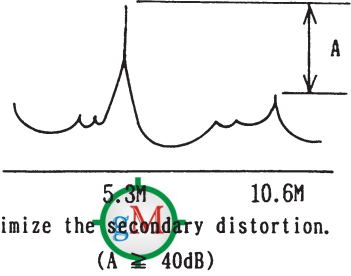
# 12-4-1. C-PB RF Frequency Response Adjustment

- When connecting a network analyzer, prepare the following cable:

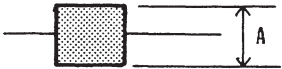
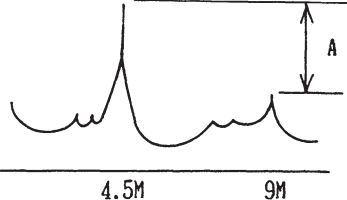


machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>Remove SP101(C-3) on the RP-29(C) board.</li> <li>Set the network analyzer output to -20dB.</li> <li>Connect the network analyzer output to TP104 (C-3) (GND; TP103(C-3) on the RP-29(C) board.</li> <li>MODE: EE</li> </ul> <p>After adjustment is completed, insert SP101(1) (C-3).</p>	<p>TP107/RP-29(C)(A-4) (GND; E1)</p> <p>MAG. <math>A = -4 \pm 1 \text{ dB}</math> (Level difference between 0 MHz and 10MH)</p> <p>DLY <math>B \leq 20\text{nsec}</math> (Phase of 5MHz to 14MHz)</p>	<p>CH-A: RV111/RP-29(C)(B-3)</p>
<p>Step 2</p> <ul style="list-style-type: none"> <li>Remove SP102(C-2) on the RP-29(C) board.</li> <li>Connect the network analyzer output to TP106(C-2) (GND; TP105(C-2) on the RP-29(C) board.</li> </ul> <p>After adjustment is completed, insert SP102(C-2).</p>	<p>TP108/RP-29(C)(A-1) (GND; E1)</p> <p><math>A = -4 \pm 1 \text{ dB}</math> (Level difference between 0 MHz and 10MH)</p> <p><math>B \leq 20\text{nsec}</math> (Phase of 5MHz to 14MHz)</p>	<p>CH-B: RV112/RP-29(C)(B-1)</p>

# 12-4-2. C-Metal REC Current and REC RF Secondary Distortion Adjustment

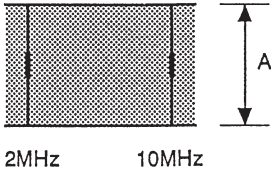
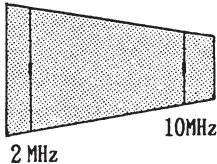
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Remove SP101(C-3) and SP102(C-1) on the RP-29(C) board.</li> <li>Using a shorting clips, short between TP103 and TP104, and TP105 and TP106.</li> <li>INPUT SELECT sw: Y-R, B</li> <li>Supply a 50/50/50 flat field signal to the COMPONENT 2 IN connector.</li> <li>Insert the BCT-20M cassette tape.</li> <li>MODE: REC</li> </ul>	<p>CH-A: TP103-TP104/RP-29(C)(C-4)(C-3) CH-B: TP105-TP106/RP-29(C)(C-2)(C-1)</p> <p>Using a current probe</p>  <p><math>A = 70 \pm 1\% \text{mA}</math></p> <p>Using an spectrum anlayzer</p>  <p>Minimize the secondary distortion. (<math>A \pm 40\text{dB}</math>)</p>	<ul style="list-style-type: none"> <li>Level adjustment CH-A: ●RV101/RP-29(C)(D-3) CH-B: ●RV103/RP-29(C)(D-1)</li> <li>Secondary distortion adjustment CH-A: ●RV105/RP-29(C)(D-3) CH-B: ●RV106/RP-29(C)(D-1)</li> </ul> <p>TRIG: TP26/DM-56(B-1)</p>

# 12-4-3. C-Oxide REC Current Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Remove SP101(C-3) and SP102(C-1) on the RP-29(C) board.</li> <li>Using a shorting clips, short between TP103 and TP104, and TP105 and TP106.</li> <li>INPUT SELECT sw: Y-R, B</li> <li>Supply a 50/50/50 flat field signal to the COMPONENT 2 IN connector.</li> <li>Insert the BCT-20G cassette tape.</li> <li>MODE: REC</li> </ul>	<p>CH-A: TP103-TP104/RP-29(C)(C-4)(C-3) CH-B: TP105-TP106/RP-29(C)(C-2)(C-1)</p> <p>Using a current probe</p>  <p><math>A = 40 \pm 1\% \text{mA}</math></p>  <p><math>A \geq 40\text{dB}</math></p> <p>Check that A satisfies the specification.</p>	<p>CH-A: ●RV102/RP-29(C)(D-4) CH-B: ●RV104/RP-29(C)(D-2)</p> <p>TRIG: TP26/DM-56(B-1)</p>

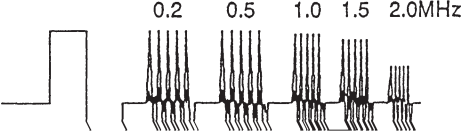
#### 12-4-4. C-REC RF Frequency Response Adjustment

• Before performing this adjustment, perform Sec. 12-5.

machine conditions for adjustment	specifications	adjustments						
<p>Step 1</p> <ul style="list-style-type: none"><li>• Supply a sweep signal to TP102(C-1) on the RP-29(C) board (GND; TP101(C-3) and E101(E-3)/RP-29(C) board).</li><li>• Remove SP101(C-3) and SP102(C-2) on the RP-29 board.</li><li>• Using a shorting clips, short between TP103 and TP104, and and TP105 and TP106.</li></ul>	<p>TP102/RP-29(C)(E-4)</p> <p>Set to a sweep signal level.</p> <div><p>2MHz 10MHz</p><p><math>A = 0.5 \pm 0.05 \text{ Vp-p (at 5MHz)}</math></p></div>	<p>Level control/ sweep generator</p>						
<p>Step 2</p> <ul style="list-style-type: none"><li>• Insert the BCT-20M cassette tape.</li><li>• MODE: REC</li></ul>	<p>CH-A: TP103-TP104/RP-29(C)(C-3)(C-3)</p> <p>CH-B: TP105-TP106/RP-29(C)(C-2)(C-2)</p> <p>Using a current probe</p> <div><p>2 MHz 10MHz</p><table><tr><th>Freq.</th><th>Level</th></tr><tr><td>2.MHz</td><td>100 % (Ref.)</td></tr><tr><td>10MHz</td><td><math>70 \pm \frac{1}{8} \%</math></td></tr></table></div>	Freq.	Level	2.MHz	100 % (Ref.)	10MHz	$70 \pm \frac{1}{8} \%$	<p>CH-A: RV107/RP-29(C)(C-4)</p> <p>CH-B: RV109/RP-29(C)(C-2)</p>
Freq.	Level							
2.MHz	100 % (Ref.)							
10MHz	$70 \pm \frac{1}{8} \%$							
<p>Step 3</p> <ul style="list-style-type: none"><li>• Insert the BCT-20G cassette tape.</li><li>• MODE: REC</li></ul>	<p>CH-A: TP103-TP104/RP-29(C)(C-4)(C-3)</p> <p>CH-B: TP105-TP106/RP-29(C)(C-2)(C-1)</p> <table><tr><th>Freq.</th><th>Level</th></tr><tr><td>2 MHz</td><td>100 % (Ref.)</td></tr><tr><td>10MHz</td><td><math>55 \pm \frac{1}{8} \%</math></td></tr></table>	Freq.	Level	2 MHz	100 % (Ref.)	10MHz	$55 \pm \frac{1}{8} \%$	<p>CH-A: RV108/RP-29(C)(C-4)</p> <p>CH-B: RV110/RP-29(C)(C-2)</p> <p>TRIG: TP26/DM-56(B-1)</p>
Freq.	Level							
2 MHz	100 % (Ref.)							
10MHz	$55 \pm \frac{1}{8} \%$							
<p>Step 4</p> <ul style="list-style-type: none"><li>• After adjustment is completed, remove the shorting clips and insert SP101(C-3) and SP102(C-1).</li></ul>	<p>Check that the secondary distortion, recording current, and PB frequency response satisfy the specifications.</p> <p>If the specifications are not satisfied, readjust Sections 12-4-2 through 12-4-4.</p>							

# 12-4-5. C-OA Frequency Response Check

- Before performing this adjustment, perform Sec. 12-5.

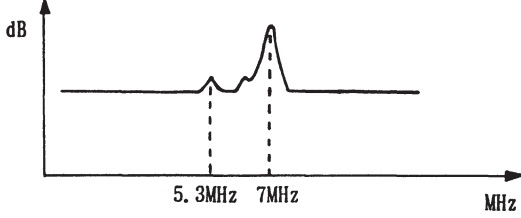
machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a multi burst signal to the COMPONENT 2 IN connector.</li> <li>• Insert the RCT-20M cassette</li> </ul>	<p>COMPONENT 2 OUT</p> 	





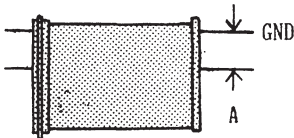
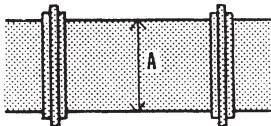
# 12-4-6. Crosstalk Adjustment

- Before performing this adjustment, perform Sec. 12-5.
- This adjustment is made after all RP-29(Y), RP-29(C) board adjustments are completed.

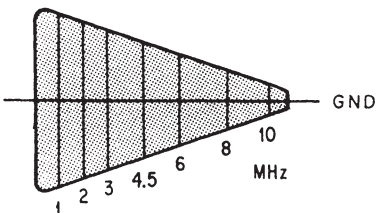
machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a 50/50/50 flat field signal to the COMPONENT 2 IN connector.</li> <li>• Remove SP1(C-3) and SP2(C-2) on the RP-29(Y) board.</li> <li>• Using a shorting clips, short between TP3 and TP4, and TP5 and TP6.</li> <li>• Using a shorting clip, short between TP1 and E1.</li> <li>• Connect a current probe to TP3 and TP4 on the RP-29(Y) board.</li> <li>• Insert the BCT-20M cassette.</li> <li>• MODE: REC</li> </ul>	<p>TP3-TP4/RP-29(Y)(C-3)(C-3)</p>  <p>Minimize the 5.3 MHz crosstalk.</p>	<p>CH-A:</p> <p>●RV13/RP-29(Y)(E-4)</p>
<p>Step 2</p> <ul style="list-style-type: none"> <li>• Set as in Step 1 and connect a current probe to TP5 and TP6 on the RP-29(Y) board.</li> </ul>	<p>TP5-TP6/RP-29(Y)(C-2)(C-2)</p> <p>Minimize the 5.3 MHz crosstalk.</p>	<p>CH-B:</p> <p>●RV14/RP-29(Y)(E-2)</p>

## 12-5. DM-56 BOARD ADJUSTMENT

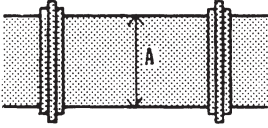
### 12-5-1. Y RF Level Adjustment

machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• Play back a flat field signal on alignment tape CR5-1B.</li> </ul>	<p>CH-A: TP1/DM-56(B-5) CH-B: TP2/DM-56(C-5)</p>  <p><math>A = -0.5 \pm 0.04 \text{ Vdc}</math></p>	<p>CH-A: ●RV34/DM-56(B-5) CH-B: ●RV35/DM-56(C-5)</p> <p>TRIG: TP26/DM-56(B-1)</p>
<p>Step 2</p> <ul style="list-style-type: none"> <li>• Fully turn RV39 and RV40 on the DM-56 board counterclockwise.</li> <li>• Play back a flat field signal on alignment tape CR5-1B.</li> <li>• Turn the TRACKING control so that the output waveform is maximized.</li> </ul>	<p>TP6/DM-56(C-3)</p>  <p><math>A = 1.0 \pm 0.04 \text{ Vp-p}</math></p>	<p>CH-A: ●RV3/DM-56(B-5) CH-B: ●RV4/DM-56(C-5)</p>
<p>Step 3</p> <ul style="list-style-type: none"> <li>• DT SELECT sw: VAR</li> <li>• After adjustment is completed, set the DT SELECT switch to off.</li> </ul>	<p><math>A = 1.0 \pm 0.04 \text{ Vp-p}</math></p>	<p>CH-A: ●RV1/DM-56(B-6) CH-B: ●RV2/DM-56(B-6)</p> <p>TRIG: TP26/DM-56(B-1)</p>

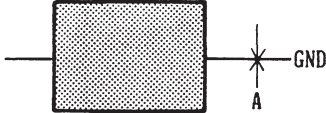
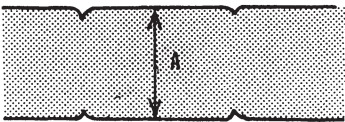
### 12-5-2. Y RF Frequency Response Check

machine conditions for adjustment	specifications	adjustments										
<div>Step 1</div> <ul style="list-style-type: none"><li>• S101-Bit2/SV-82: ON</li><li>• S201-Bit2/DT-13: ON</li><li>• DT SELECT sw: OFF</li><li>• Play back a RF sweep signal on alignment tape CR5-1B.</li><li>• Turn the TRACKING control so that the output waveform is maximized.</li></ul>	<div>CH-A: TP3/DM-56(C-5)</div> <div>CH-B: TP4/DM-56(B-2)</div> <div></div>											
<div>Step 2</div> <ul style="list-style-type: none"><li>• DT SELECT sw: VAR</li><li>• After check is completed, set the switches as follows: S101-Bit2/SV-82: OFF S201-Bit2/DT-13: OFF DT SELECT sw: OFF</li></ul>	<div>Check the frequency response.</div> <table><tr><th>Freq.</th><th>Level</th></tr><tr><td>4.5MHz</td><td>100 % (Ref.)</td></tr><tr><td>6 MHz</td><td>70 ± 10 %</td></tr><tr><td>8 MHz</td><td>40 ± 10 %</td></tr><tr><td>10 MHz</td><td>20 ± 10 %</td></tr></table>	Freq.	Level	4.5MHz	100 % (Ref.)	6 MHz	70 ± 10 %	8 MHz	40 ± 10 %	10 MHz	20 ± 10 %	
Freq.	Level											
4.5MHz	100 % (Ref.)											
6 MHz	70 ± 10 %											
8 MHz	40 ± 10 %											
10 MHz	20 ± 10 %											
		TRIG: TP26/DM-56(B-1)										

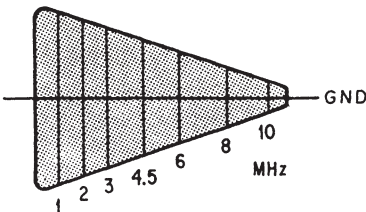
### 12-5-3. Y RF AGC Output Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a flat field signal on alignment tape CR5-1B.</li> <li>• Turn the TRACKING control so that the output waveform is maximized.</li> </ul>	<p>TP7/DM-56(A-2)</p>  <p><math>A = 1.0 \pm 0.04 \text{ Vp-p}</math></p>	<p>RV11/DM-56(A-2)</p> <p>TRIG: TP26/DM-56(B-1)</p>

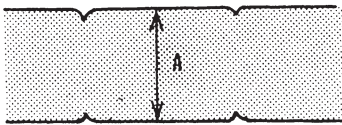
# 12-5-4. C R F Level Adjustment

machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• Play back a flat field signal on alignment tape CR5-1B.</li> </ul>	<p>CH-A: TP301/DM-56(G-5) CH-B: TP302/DM-56(H-5)</p>  <p><math>A = 0 \pm 0.04 \text{ Vdc}</math></p>	<p>CH-A: RV322/DM-56(G-5) CH-B: RV323/DM-56(H-5)</p> <p>TRIG: TP317/DM-56(F-1)</p>
<p>Step 2</p> <ul style="list-style-type: none"> <li>• Play back a flat field signal on alignment tape CR5-1B.</li> <li>• Turn the TRACKING control so that the output waveform is maximized.</li> </ul>	<p>TP304/DM-56(G-2)</p>  <p><math>A = 1.0 \pm 0.04 \text{ Vp-p}</math></p>	<p>CH-A: RV302/DM-56(G-4) CH-B: RV304/DM-56(H-5)</p>
<p>Step 3</p> <ul style="list-style-type: none"> <li>• DT SELECT sw: VAR</li> </ul> <p>• After adjustment is completed, set the DT SELECT switch to off.</p>	<p><math>A = 1.0 \pm 0.04 \text{ Vp-p}</math></p>	<p>CH-A: RV301/DM-56(G-6) CH-B: RV303/DM-56(H-6)</p> <p>TRIG: TP317/DM-56(F-1)</p>

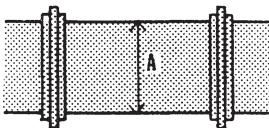
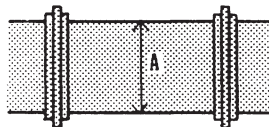
### 12-5-5. C RF Frequency Response Check

machine conditions for adjustment	specifications	adjustments												
<p>Step 1</p> <ul style="list-style-type: none"> <li>• S101-Bit2/SV-82: ON</li> <li>• S201-Bit2/DT-13: ON</li> <li>• DT SELECT sw: OFF</li> <li>• Play back a RF sweep signal on alignment tape CR5-1B.</li> <li>• Turn the TRACKING control so that the output waveform is maximized.</li> </ul>	<p>CH-A: TP303/DM-56(H-4) CH-B: TP304/DM-56(G-2)</p> 													
<p>Step 2</p> <ul style="list-style-type: none"> <li>• DT SELECT sw: VAR</li> </ul> <p>• After check is completed, set the switches as follows: S101-Bit2/SV-82: OFF S201-Bit2/DT-13: OFF DT SELECT sw: OFF</p>	<table border="1"> <thead> <tr> <th>Freq.</th><th>Level (DT: OFF)</th><th>Level (DT: VAR)</th></tr> </thead> <tbody> <tr> <td>4.5MHz</td><td>100 % (Ref.)</td><td>100 % (Ref.)</td></tr> <tr> <td>6 MHz</td><td>70 ± 10 %</td><td>60 ± 10 %</td></tr> <tr> <td>8 MHz</td><td>40 ± 10 %</td><td>30 ± 10 %</td></tr> </tbody> </table>	Freq.	Level (DT: OFF)	Level (DT: VAR)	4.5MHz	100 % (Ref.)	100 % (Ref.)	6 MHz	70 ± 10 %	60 ± 10 %	8 MHz	40 ± 10 %	30 ± 10 %	<p>TRIG: TP317/DM-56(J-4)</p>
Freq.	Level (DT: OFF)	Level (DT: VAR)												
4.5MHz	100 % (Ref.)	100 % (Ref.)												
6 MHz	70 ± 10 %	60 ± 10 %												
8 MHz	40 ± 10 %	30 ± 10 %												

### 12-5-6. C RF AGC Output Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a flat field signal on alignment tape CR5-1B.</li> <li>• Turn the TRACKING control so that the output waveform is maximized.</li> </ul>	<p>TP305/DM-56(F-1)</p>  <p><math>A = 1.0 \pm 0.04 \text{ Vp-p}</math></p>	<p>RV311/DM-56(F-1)</p> <p>TRIG: TP317/DM-56(F-1)</p>

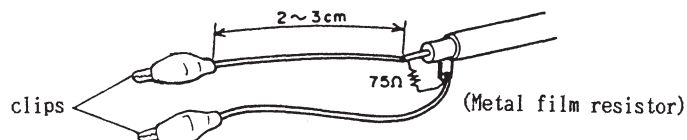
# 12-5-7. Y HF Adjustment

machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• Play back a flat field signal on alignment tape CR5-1B.</li> <li>• Turn the TRACKING control so that the output waveform is maximized.</li> </ul>	<p>TP8/DM-56(C-1)</p>  <p><math>A = 140 \pm 20 \text{ mVp-p}</math></p>	<p>RV14/DM-56(B-2)</p>
<p>Step 2</p> <ul style="list-style-type: none"> <li>• Play back a color-bar signal on alignment tape CR5-2A.</li> <li>• Turn the TRACKING control so that the output waveform is maximized.</li> </ul>	<p>TP8/DM-56(C-1)</p>  <p><math>A = 160 \pm 10 \text{ mVp-p}</math></p>	<p>RV31/DM-56(B-1)</p> <p>TRIG: TP26/DM-56(B-1)</p>

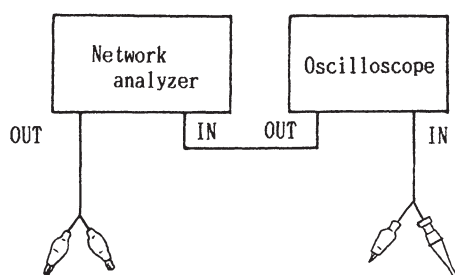




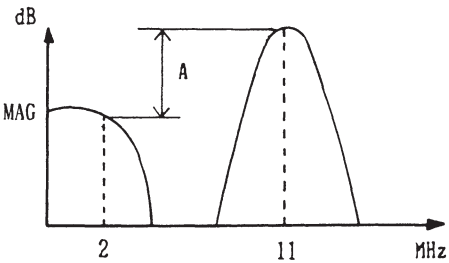
## 12-5-8. HF Adjustment

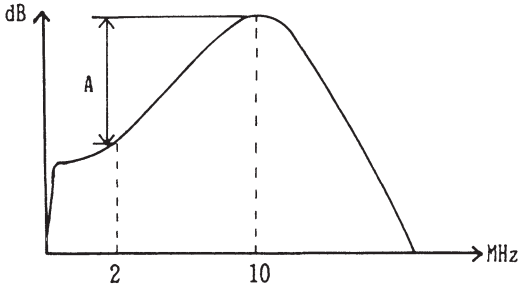
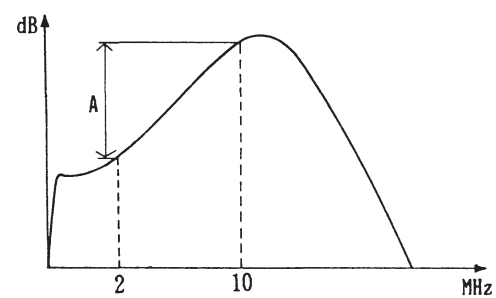
Prepare the following cable when connecting a network analyzer:



### 【Connection】

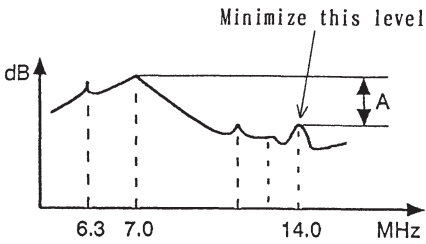


machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>Remove SP2(A-2) on the DM-56 board.</li> <li>Connect the network analyzer output to TP7(A-2)(GND/E5(D-1)) on the DM-56 board.</li> <li>Set the network analyzer output to -20dB and the oscilloscope CH-2 to 20mV/DIV.</li> <li>Preset RV32 on the DM-56 board (D-1) to be position shown below.</li> </ul>  <ul style="list-style-type: none"> <li>Preset RV33 on the DM-56 board (D-1) to the position shown below.</li> </ul>  <ul style="list-style-type: none"> <li>Play back a flat field signal on alignment tape CR5-1B</li> </ul>	<p>TP12/DM-56(D-1)</p>  <p>Peak (approx. 11MHz) - 2MHz frequency response = A  <math>A = 7.0 \pm 0.5 \text{ dB}</math></p>	<ul style="list-style-type: none"> <li>11MHz</li> <li>RV32/DM-56(D-1)</li> </ul>

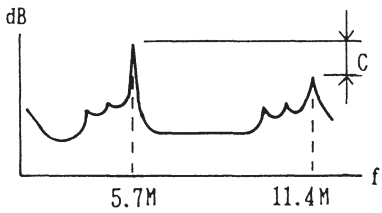
<p>Step 2</p> <ul style="list-style-type: none"> <li>• Set the network analyzer output to -40dB.</li> </ul>	<p>TP9/DM-56(D-1)</p>  <p>Peak (approx. 10MHz) - 2MHz frequency response = A  <math>A = 19.0 \pm 0.5 \text{ dB}</math></p> <p>Readjust Step 1 when the specification is not satisfied.</p>	<p>RV33/DM-56(D-1)</p>
<p>Step 3</p> <ul style="list-style-type: none"> <li>• Fully turn RV41 counter clockwise.</li> <li>• Preset RV42 on the DM-56 board (D-1) to the position shown below.</li> <li>• Play back alignment tape CR5-2A.</li> <li>• Set the network analyzer output to -40dB.</li> <li>• After adjusted is completed SP2(A-2) insert.</li> </ul>	<p>TP9/DM-56(D-1)</p>  <p>Peak (approx. 10MHz) - 2MHz frequency response = A  <math>A = 20 \pm 1 \text{ dB}</math></p>	<p>RV42/DM-56(D-1)</p>



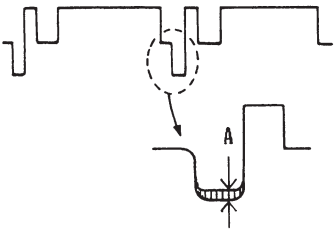
### 12-5-9. Y HF Balance Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a flat field signal on alignment tape CR5-1B.</li> </ul>	<p>TP9/DM-56(D-1)</p>  <p>Minimize the secondary distortion. (<math>A \geq 40\text{dB}</math>)</p>	<p>RV15/DM-56(C-1)</p>

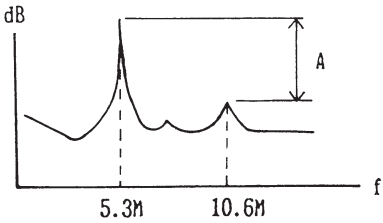
### 12-5-10. Y Limiter Balance Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• PB • PB/EE sw: PB/EE</li> <li>• Supply a 50/50/50 flat field signal to the COMPONENT 2 IN connector.</li> <li>• MODE: EE</li> <li>• Insert the BCT-20M cassette.</li> </ul>	<p>TP10/DM-56(E-1)</p>  <p>Minimize the secondary distortion (11.4MHz). (<math>C \geq 40\text{ dB}</math>)</p>	<p>RV16/DM-56(D-1)</p>

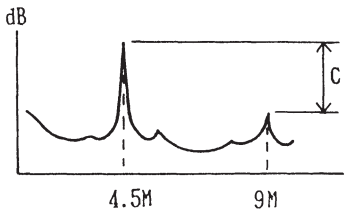
### 12-5-11. Y Demodulator Balance Adjustment

machine conditions for adjustment	specifications	adjustments
<b>Step 1</b> <ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• PB • PB/EE sw: PB/EE</li> <li>• Supply a 50/50/50 flat field signal to the COMPONENT 2 IN connector.</li> <li>• Insert the BCT-20G cassette.</li> <li>• MODE: EE</li> </ul>	TP11/DM-56(D-5)  Minimize the secondary distortion.	⚙RV17/DM-56(E-1)
<b>Step 2</b> <ul style="list-style-type: none"> <li>• Eject the cassette tape.</li> </ul>	$A \leq 30 \text{ mV}$	

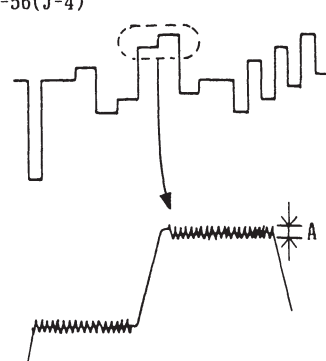
### 12-5-12. C HF Balance Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a flat field signal on alignment tape CR5-1B.</li> </ul>	TP310/DM-56(H-1)  Minimize the secondary distortion. $(A \geq 40\text{dB})$	⚙RV313/DM-56(G-1)

### 12-5-13. C Limiter Balance Adjustment

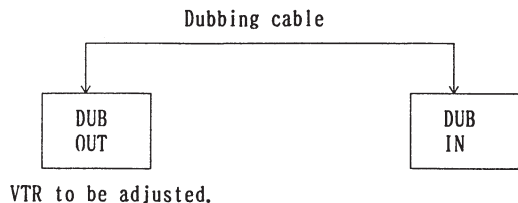
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• PB • PB/EE sw: PB/EE</li> <li>• Supply a 50/50/50 flat field signal to the COMPONENT 2 IN connector.</li> <li>• MODE: EE</li> <li>• Insert the BCT-20G cassette.</li> </ul>	<p>TP318/DM-56(H-2)</p>  <p>Minimize the secondary distortion. (<math>C \geq 40\text{dB}</math>)</p>	<p>RV321/DM-56(G-2)</p>

### 12-5-14. C Demodulator Balance Adjustment

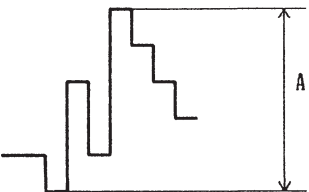
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• PB • PB/EE sw: PB/EE</li> <li>• Supply a color-bar signal to the COMPONENT 2 IN connector.</li> <li>• Insert the BCT-20G cassette.</li> <li>• MODE: EE</li> </ul>	<p>TP312/DM-56(J-4)</p>  <p>Minimize the carrier leak. (<math>A \leq 30\text{ mV}</math>)</p>	<p>RV314/DM-56(J-1)</p> <p>TRIG: TP24/DM-56(F-7)</p>

## 12-5-15. Y DUB OUT Level Adjustment

### 【Connection】

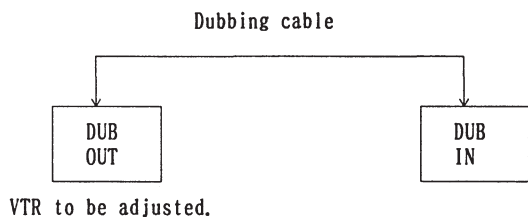


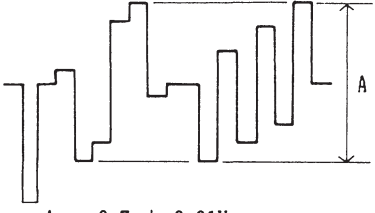
Connect using a dubbing cable as illustrated.

machine conditions for adjustment	specifications	adjustments
<b>Step 1.</b> <ul style="list-style-type: none"> <li>• Connect the DUB OUT and DUB IN connectors using a dubbing cable.</li> <li>• Play back a color-bar signal on alignment tape CR5-1B.</li> </ul>	TP25/DM-56(D-7)  $A = 1.0 \pm 0.01 \text{ Vp-p}$	●RV23/DM-56(D-5) * RV23 is put on the IC21 (D-4).
<b>Step 2.</b> <ul style="list-style-type: none"> <li>• Connect as in Step 1 and play back a color-bar signal on alignment tape CR5-2A.</li> </ul>	$A = 1.0 \pm 0.01 \text{ Vp-p}$	●RV19/DM-56(D-4)

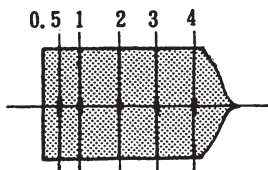
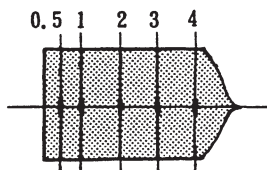
## 12-5-16. C DUB OUT Level Adjustment

### 【Connection】

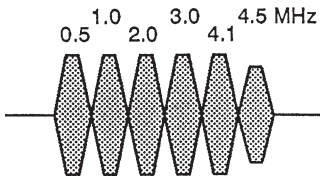


machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Connect DUB OUT and DUB IN connectors using a dubbing cable.</li> <li>• Play back a color-bar signal on alignment tape CR5-1B.</li> <li>• After adjustment is completed, remove the dubbing cable.</li> </ul>	TP315/DM-56(H-6)  $A = 0.7 \pm 0.01 \text{ Vp-p}$	●RV315/DM-56(J-3)

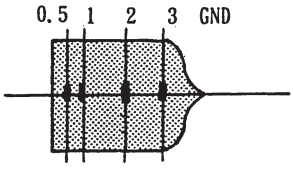
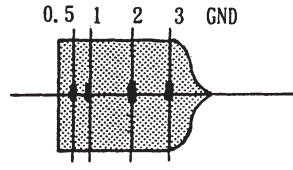
# 12-5-17. Y Video Frequency Response Adjustment

machine conditions for adjustment	specifications	adjustments												
<p>Step 1</p> <ul style="list-style-type: none"><li>• Play back a 60% H sweep (CTDM) signal on alignment tape CR5-1B.</li><li>• DT SELECT sw: OFF</li></ul>	<p>TP11/DM-56(D-5)</p>  <table><thead><tr><th>Freq.</th><th>Level</th></tr></thead><tbody><tr><td>0.5MHz</td><td>100 % (Ref. )</td></tr><tr><td>1 MHz</td><td>100 ± 4 %</td></tr><tr><td>2 MHz</td><td>100 ± 4 %</td></tr><tr><td>3 MHz</td><td>100 ± 4 %</td></tr><tr><td>4 MHz</td><td>100 ± 4 %</td></tr></tbody></table>	Freq.	Level	0.5MHz	100 % (Ref. )	1 MHz	100 ± 4 %	2 MHz	100 ± 4 %	3 MHz	100 ± 4 %	4 MHz	100 ± 4 %	<p>CH-A: RV7/DM-56(B-5)</p> <p>CH-B: RV8/DM-56(B-4)</p>
Freq.	Level													
0.5MHz	100 % (Ref. )													
1 MHz	100 ± 4 %													
2 MHz	100 ± 4 %													
3 MHz	100 ± 4 %													
4 MHz	100 ± 4 %													
<p>Step 2</p> <ul style="list-style-type: none"><li>• DT SELECT sw: VAR</li></ul>	<p>TP11/DM-56(D-5)</p>  <table><thead><tr><th>Freq.</th><th>Level</th></tr></thead><tbody><tr><td>0.5MHz</td><td>100 % (Ref. )</td></tr><tr><td>1 MHz</td><td>100 ± 4 %</td></tr><tr><td>2 MHz</td><td>100 ± 4 %</td></tr><tr><td>3 MHz</td><td>100 ± 4 %</td></tr><tr><td>4 MHz</td><td>100 ± 4 %</td></tr></tbody></table>	Freq.	Level	0.5MHz	100 % (Ref. )	1 MHz	100 ± 4 %	2 MHz	100 ± 4 %	3 MHz	100 ± 4 %	4 MHz	100 ± 4 %	<p>CH-A: RV9/DM-56(B-5)</p> <p>CH-B: RV10/DM-56(B-4)</p>
Freq.	Level													
0.5MHz	100 % (Ref. )													
1 MHz	100 ± 4 %													
2 MHz	100 ± 4 %													
3 MHz	100 ± 4 %													
4 MHz	100 ± 4 %													

• Before performing this adjustment, perform Sec. 12-5-20.

<div>Step 3</div> <div><ul style="list-style-type: none"><li>• Play back a multi burst signal on alignment tape CR5-2A.</li><li>• DT SELECT sw: OFF</li></ul></div>	<div>COMPONENT 2 Y OUT</div> <div></div> <div><table><tr><th>Freq.</th><th>Level</th></tr><tr><td>0.5MHz</td><td>100 % (Ref. )</td></tr><tr><td>1 MHz</td><td>100 ± 6 %</td></tr><tr><td>2 MHz</td><td>100 ± 6 %</td></tr><tr><td>3 MHz</td><td>95 ± 10%</td></tr><tr><td>4.1MHz</td><td>70 ± 15%</td></tr></table></div>	Freq.	Level	0.5MHz	100 % (Ref. )	1 MHz	100 ± 6 %	2 MHz	100 ± 6 %	3 MHz	95 ± 10%	4.1MHz	70 ± 15%	<div>RV31/DM-56(B-1)</div> <div>TRIG: TP26/DM-56(B-1)</div>
Freq.	Level													
0.5MHz	100 % (Ref. )													
1 MHz	100 ± 6 %													
2 MHz	100 ± 6 %													
3 MHz	95 ± 10%													
4.1MHz	70 ± 15%													
<div>Step 4</div> <div><ul style="list-style-type: none"><li>• DT SELECT sw: VAR</li><li>• After adjustment is completed, set the DT SELECT switch to OFF.</li></ul></div>														

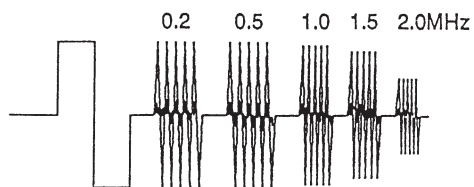
# 12-5-18. C DUB Frequency Response Adjustment

machine conditions for adjustment	specifications	adjustments										
<p>Step 1</p> <ul style="list-style-type: none"><li>• Play back a 60% H sweep (CTDM) signal on alignment tape CR5-1B.</li><li>• DT SELECT sw: OFF</li><li>• Connect the DUB OUT and DUB IN connectors using a dubbing cable.</li></ul>	<p>TP312/DM-56(J-4)</p>  <table><thead><tr><th>Freq.</th><th>Level</th></tr></thead><tbody><tr><td>0.5MHz</td><td>100 % (Ref.)</td></tr><tr><td>1 MHz</td><td>100 ± 4 %</td></tr><tr><td>2 MHz</td><td>100 ± 4 %</td></tr><tr><td>3 MHz</td><td>95 ± 5 %</td></tr></tbody></table>	Freq.	Level	0.5MHz	100 % (Ref.)	1 MHz	100 ± 4 %	2 MHz	100 ± 4 %	3 MHz	95 ± 5 %	<p>CH-A: ●RV310/DM-56(H-4)</p> <p>CH-B: ●RV308/DM-56(H-3)</p>
Freq.	Level											
0.5MHz	100 % (Ref.)											
1 MHz	100 ± 4 %											
2 MHz	100 ± 4 %											
3 MHz	95 ± 5 %											
<p>Step 2</p> <ul style="list-style-type: none"><li>• DT SELECT sw: VAR</li></ul> <p>• After adjustment is completed, set the DT SELECT switch to OFF.</p>	<p>TP312/DM-56(J-4)</p>  <table><thead><tr><th>Freq.</th><th>Level</th></tr></thead><tbody><tr><td>0.5MHz</td><td>100 % (Ref.)</td></tr><tr><td>1 MHz</td><td>100 ± 4 %</td></tr><tr><td>2 MHz</td><td>100 ± 4 %</td></tr><tr><td>3 MHz</td><td>95 ± 5 %</td></tr></tbody></table>	Freq.	Level	0.5MHz	100 % (Ref.)	1 MHz	100 ± 4 %	2 MHz	100 ± 4 %	3 MHz	95 ± 5 %	<p>CH-A: ●RV307/DM-56(G-4)</p> <p>CH-B: ●RV309/DM-56(G-3)</p>
Freq.	Level											
0.5MHz	100 % (Ref.)											
1 MHz	100 ± 4 %											
2 MHz	100 ± 4 %											
3 MHz	95 ± 5 %											

Step 3

- DT SELECT sw: OFF
- Play back a multi burst signal on alignment tape CR5-2A.

TP316/DM-56(H-7)



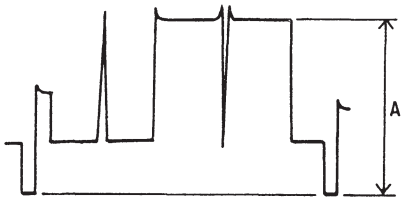
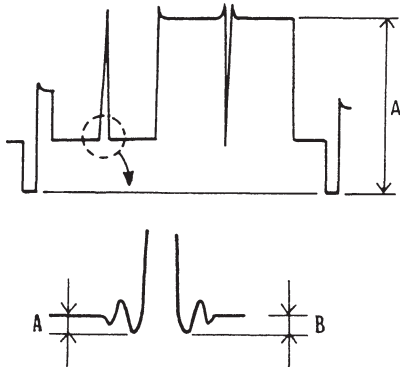
Freq.	Level
0.2MHz	100 % (Ref. )
0.5MHz	100 $\pm$ 5 %
1 MHz	95 $\pm$ 5 %
1.5MHz	75 $\pm$ 10%

RV305/DM-56(G-1)

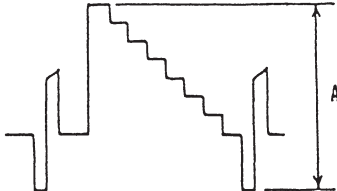
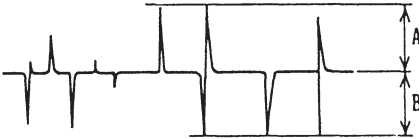
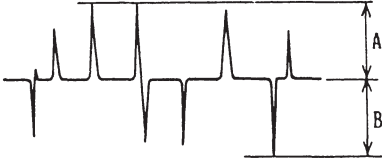
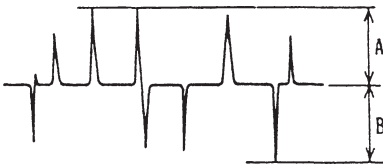




# 12-5-19. Y DT BIDIREX Output Adjustment

machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• DT SELECT sw: VAR</li> <li>• S302/DM-56: ON</li> <li>• Play back a pulse &amp; bar (CTDM) signal on the composite self-REC tepe and put the unit into the STILL mode.</li> </ul>	<p>TP11/DM-56(D-5)</p>  <p><math>A = 1.0 \pm 0.04 \text{ Vp-p}</math></p>	<p>RV24/DM-56(F-4)</p>
<p>Step 2</p> <ul style="list-style-type: none"> <li>• DT SELECT sw: VAR</li> <li>• S302/DM-56: ON</li> <li>• Play back a pulse &amp; bar (CTDM) signal on the composite self-REC tape and put the unit into the STILL mode.</li> </ul>	<p>TP11/DM-56(D-5)</p>  <p>Minimize the ringing.  <math>A = B \leq 80 \text{ mV}</math></p>	<p>RV21/DM-56(E-5)  RV22/DM-56(E-5)  Adjust alternately.</p>

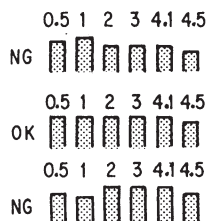
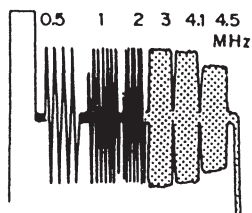
# 12-5-20. Y Nonlinear De-emphasis Adjustment

machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• Play back a color-bar signal on alignment tape CR5-1B.</li> </ul>	<p>TP23/DM-56(E-7)</p>  <p><math>A = 1.0 \pm 0.02 \text{ Vp-p}</math></p>	<p>RV27/DM-56(D-5)</p>
<p>Step 2</p> <ul style="list-style-type: none"> <li>• Play back a pulse &amp; bar signal on alignment tape CR5-1B.</li> </ul>	<p>TP15/DM-56(E-5)</p>  <p><math>A = B</math></p>	<p>RV26/DM-56(D-6)</p>
<p>Step 3</p> <ul style="list-style-type: none"> <li>• Play back a pulse &amp; bar signal on alignment tape CR5-1B.</li> </ul>	<p>TP22/DM-56(F-6)</p>  <p><math>A = B</math></p>	<p>RV30/DM-56(E-5)</p>
<p>Step 4</p> <ul style="list-style-type: none"> <li>• Play back a pulse &amp; bar signal on composite OA tape (Metal) and put the unit into the STILL mode.</li> <li>• DT SELECT sw: VAR</li> </ul>	<p>TP24/DM-56(F-7)</p> 	<p>RV36/DM-56(E-6)</p>

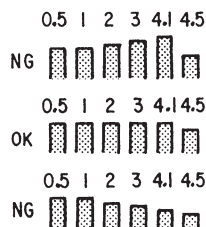
# Step 5

- Play back a multi burst signal on alignment tape CR5-1B.
- DT SELECT sw: OFF

## COMPONENT 2 Y OUT



Make a low frequency response (0.5, 1MHz) flat using RV601.



Adjust a high frequency response (2, 3, 4.1MHz) using RV25 to satisfy the specification.

Freq.	Level
0.5MHz	100 % (Ref. )
1 MHz	100 $\pm$ 4 %
2 MHz	100 $\pm$ 4 %
3 MHz	100 $\pm$ 4 %
4.1MHz	98 $\pm$ 4 %
4.5MHz	80 $\pm$ 10%

- For low frequency  
●RV601/DM-56(D-6)
- For high frequency  
●RV25/DM-56(D-6)

Alternately adjust RV601 and RV25 until the frequency response satisfies the specification.

TRIG: TP26/DM-56(B-1)

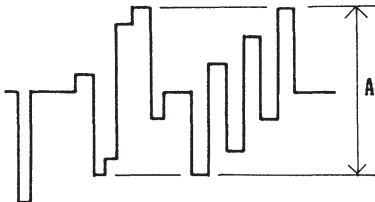
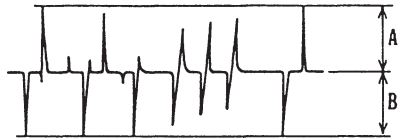
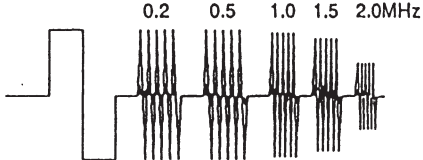



# Step 6




- Play back a multi burst signal on alignment tape CR5-1B.
- DT SELECT sw: VAR

- After check, set the DT SELECT switch to OFF.

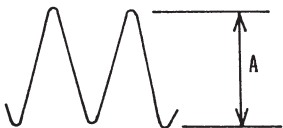
Check that the same specification as in Step 5 is satisfied.

# 12-5-21. C Nonlinear De-emphasis Adjustment

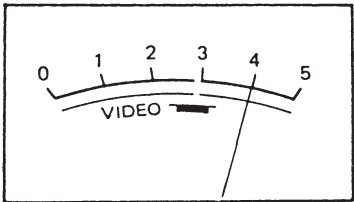
machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• Play back a color-bar signal on alignment tape CR5-1B.</li> </ul>	<p>TP316/DM-56(H-7)</p>  <p><math>A = 0.7 \pm 0.02 \text{ Vp-p}</math></p>	<p>RV316/DM-56(J-4)</p>
<p>Step 2</p> <ul style="list-style-type: none"> <li>• Play back a pulse &amp; bar signal on alignment tape CR5-1B.</li> </ul>	<p>TP314/DM-56(H-5)</p>  <p><math>A = B</math></p>	<p>RV318/DM-56(J-5)</p>
<p>Step 3</p> <ul style="list-style-type: none"> <li>• Play back a multi burst signal on alignment tape CR5-1B.</li> <li>• DT SELECT sw: OFF</li> </ul>	<p>COMPONENT 2 R-Y OUT</p>  <div style="display: flex; flex-direction: column; align-items: center;"> <div style="display: flex; justify-content: space-around; width: 100%;"> <span>0.2</span><span>0.5</span><span>1</span><span>1.5</span><span>2</span> </div> <div style="display: flex; align-items: center;"> <span>NG</span>  </div> <div style="display: flex; align-items: center;"> <span>OK</span>  </div> <div style="display: flex; align-items: center;"> <span>NG</span>  </div> </div> <p>Make a low frequency response (0.2MHz, 0.5MHz) flat using RV350.</p>	<p>For low frequency RV350/DM-56(J-5)</p> <p>For high frequency RV317/DM-56(J-4)</p> <p>Alternately adjust RV350 and RV317 until the frequency response satisfies the specification.</p>

	<div> <div>0.20.5   1.5 2</div> <div>NG </div> <div>0.2 0.5   1.5 2</div> <div>OK </div> <div>0.20.5   1.5 2</div> <div>NG </div> </div> <p>Adjust a high frequency response (1.0MHz, 1.5MHz) using RV317 to satisfy the specification.</p> <table> <tr> <th>Freq.</th> <th>Level</th> </tr> <tr> <td>0.2MHz</td> <td>100 % (Ref. )</td> </tr> <tr> <td>0.5MHz</td> <td>100 ± 6 %</td> </tr> <tr> <td>1.0MHz</td> <td>100 ± 6 %</td> </tr> <tr> <td>1.5MHz</td> <td>95 ± 10%</td> </tr> </table>	Freq.	Level	0.2MHz	100 % (Ref. )	0.5MHz	100 ± 6 %	1.0MHz	100 ± 6 %	1.5MHz	95 ± 10%	<p>For high frequency ●RV317/DM-56(J-4)</p> <p>TRIG: TP26/DM-56(B-1)</p>
Freq.	Level											
0.2MHz	100 % (Ref. )											
0.5MHz	100 ± 6 %											
1.0MHz	100 ± 6 %											
1.5MHz	95 ± 10%											
<p>Step 4</p> <ul style="list-style-type: none"> <li>• DT SELECT sw: VAR</li> <li>• Play back a multi burst signal on alignment tape CR5-1B.</li> <li>• After check, set the DT SELECT switch to OFF.</li> </ul>	<p>Check that the same specification as in Step 3 is satisfied.</p>											


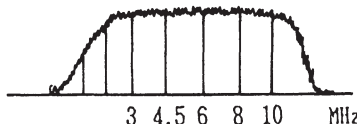
### 12-5-22. Y RF Envelope Adjustment


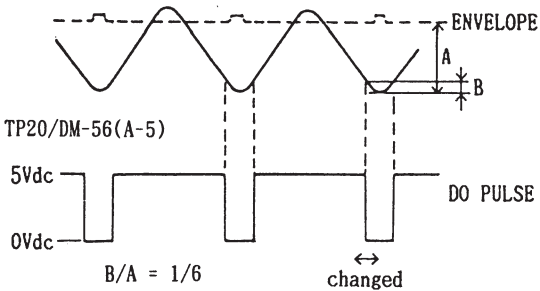

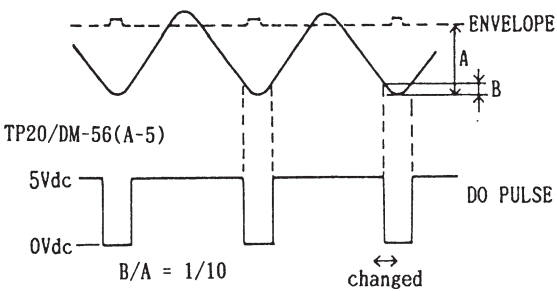
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a flat field signal on alignment tape CR5-1B.</li> <li>• MODE: STILL</li> <li>• Turn the search dial so that the output waveform is maximized.</li> </ul>	<p>TP18/DM-56(C-4)</p>  <p><math>A = 0.6 \pm 0.1 \text{ Vp-p}</math></p>	<p>RV5/DM-56(C-3)</p> <p>TRIG: TP26/DM-56(B-1)</p>

### 12-5-23. Tracking Meter Calibration Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a flat field signal on alignment tape CR5-1B.</li> <li>• Adjust the TRACKING control so that the VIDEO/RF meter's deflection is maximized.</li> </ul>	<p>VIDEO RF meter/front panel</p>  <p>Set the pointer to 4.</p>	<p>RV13/DM-56(A-5)</p>

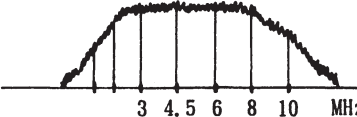

# 12-5-24. Y DOC Sensitivity Adjustment


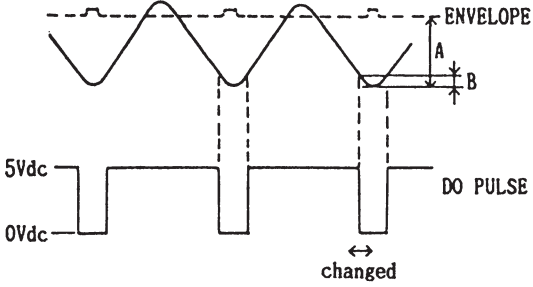

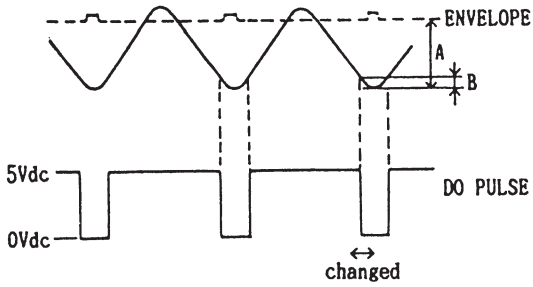
machine conditions for adjustment	specifications	adjustments												
<p>Step 1</p> <ul style="list-style-type: none"><li>• Play back a RF sweep signal on alignment tape CR5-1B.</li><li>• S101-Bit2/SV-82: ON</li><li>• S201-Bit2/DT-13: ON</li><li>• Adjust the TRACKING control so that the output waveform near 7MHz is maximized.</li><li>• DT SELECT sw: OFF</li></ul>	<p>TP17/DM-56(A-4)</p>  <table><tr><th>Freq.</th><th>Level</th></tr><tr><td>3 MHz</td><td>100 ± 20%</td></tr><tr><td>4.5MHz</td><td>100 % (Ref. )</td></tr><tr><td>6 MHz</td><td>100 ± 15%</td></tr><tr><td>8 MHz</td><td>100 ± 20%</td></tr><tr><td>10 MHz</td><td>100 ± 20%</td></tr></table>	Freq.	Level	3 MHz	100 ± 20%	4.5MHz	100 % (Ref. )	6 MHz	100 ± 15%	8 MHz	100 ± 20%	10 MHz	100 ± 20%	<p>For low frequency RV29/DM-56(A-3)</p> <p>For high frequency RV6/DM-56(A-3)</p> <p>TRIG: TP26/DM-56(B-1)</p>
Freq.	Level													
3 MHz	100 ± 20%													
4.5MHz	100 % (Ref. )													
6 MHz	100 ± 15%													
8 MHz	100 ± 20%													
10 MHz	100 ± 20%													
<p>Step 2</p> <ul style="list-style-type: none"><li>• S101-Bit2/SV-82: ON</li><li>• S201-Bit2/DT-13: ON</li><li>• Play back a RF sweep signal on alignment tape CR5-1B.</li><li>• DT SELECT sw: VAR</li></ul> <p>• After adjustment is completed, set the switches as follows: S101-Bit2/SV-82: OFF S201-Bit2/DT-13: OFF DT SELECT sw: OFF</p>	<p>TP17/DM-56(E-9)</p>  <table><tr><th>Freq.</th><th>Level</th></tr><tr><td>3 MHz</td><td>100 ± 20%</td></tr><tr><td>4.5MHz</td><td>100 % (Ref. )</td></tr><tr><td>6 MHz</td><td>100 ± 15%</td></tr><tr><td>8 MHz</td><td>100 ± 25%</td></tr><tr><td>10 MHz</td><td>90 ± 30%</td></tr></table>	Freq.	Level	3 MHz	100 ± 20%	4.5MHz	100 % (Ref. )	6 MHz	100 ± 15%	8 MHz	100 ± 25%	10 MHz	90 ± 30%	
Freq.	Level													
3 MHz	100 ± 20%													
4.5MHz	100 % (Ref. )													
6 MHz	100 ± 15%													
8 MHz	100 ± 25%													
10 MHz	90 ± 30%													

<p>Step 3</p> <ul style="list-style-type: none"> <li>• DT SELECT sw : RP</li> <li>• Play back a color-bar signal on alignment tape CR5-2A.</li> </ul>	<p>TP17/DM-56(A-4)</p> 	<p>Maximize the DC level using a TRACKING control.</p>
<p>Step 4</p> <ul style="list-style-type: none"> <li>• PB. PB/EE sw : PB/EE</li> <li>• MODE: JOG STILL</li> </ul>	<p>TP17/DM-56(A-4)</p>  <p>TP20/DM-56(A-5)</p> <p>5Vdc</p> <p>0Vdc</p> <p>B/A = 1/6</p> <p>changed</p>	<p>RV12/DM-56(A-4)</p> <p>TRIG: TP21/DM-56(D-6)</p>
<p>Step 5</p> <ul style="list-style-type: none"> <li>• DT SELECT sw : RP</li> <li>• Play back a flat field signal on alignment tape CR5-1B.</li> </ul>	<p>TP17/DM-56(A-4)</p> 	<p>Maximize the DC level using a TRACKING control.</p>
<p>Step 6</p> <ul style="list-style-type: none"> <li>• PB. PB/EE sw : PB</li> <li>• MODE: JOG STILL</li> </ul>	<p>TP17/DM-56(A-4)</p>  <p>TP20/DM-56(A-5)</p> <p>5Vdc</p> <p>0Vdc</p> <p>B/A = 1/10</p> <p>changed</p>	<p>RV38/DM-56(B-5)</p> <p>TRIG: TP26/DM-56(B-1)</p>
<p>Step 7</p> <ul style="list-style-type: none"> <li>• Play back a dropout check signal on alignment tape CR5-1B.</li> </ul>	<p>Check that the dropout portion is compensated on the monitor.</p>	



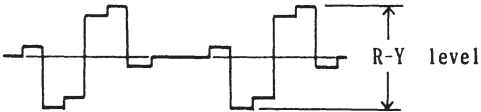
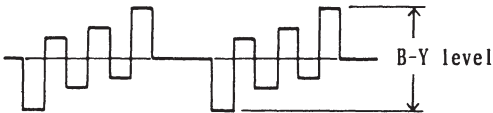
# 12-5-25. C DOC Sensitivity Adjustment

machine conditions for adjustment	specifications	adjustments										
<p>Step 1</p> <ul style="list-style-type: none"><li>• Play back a RF sweep signal on alignment tape CR5-1B.</li><li>• S101-Bit2/SV-82: ON</li><li>• S201-Bit2/DT-13: ON</li><li>• Adjust the TRACKING control so that the output waveform near 5MHz is maximized.</li><li>• DT SELECT sw: OFF</li></ul>	<p>TP307/DM-56(F-3)</p>  <table><tr><th>Freq.</th><th>Level</th></tr><tr><td>3 MHz</td><td>100 ± 10%</td></tr><tr><td>4.5MHz</td><td>100 % (Ref.)</td></tr><tr><td>6 MHz</td><td>105 ± 10%</td></tr><tr><td>8 MHz</td><td>110 ± 10%</td></tr></table>	Freq.	Level	3 MHz	100 ± 10%	4.5MHz	100 % (Ref.)	6 MHz	105 ± 10%	8 MHz	110 ± 10%	<p>For low frequency RV324/DM-56(F-2)</p> <p>For high frequency RV325/DM-56(F-2)</p> <p>TRIG: TP26/DM-56(B-1)</p>
Freq.	Level											
3 MHz	100 ± 10%											
4.5MHz	100 % (Ref.)											
6 MHz	105 ± 10%											
8 MHz	110 ± 10%											
<p>Step 2</p> <ul style="list-style-type: none"><li>• S101-Bit4/SV-83: ON</li><li>• S201-Bit2/DT-13: ON</li><li>• Play back a RF sweep signal on alignment tape CR5-1B.</li><li>• DT SELECT sw: VAR</li></ul> <p>• After adjustment is completed, set the switches as follows: S101-Bit2/SV-82: OFF S201-Bit2/DT-13: OFF DT SELECT sw: OFF</p>	<p>TP307/DM-56(F-3)</p>  <table><tr><th>Freq.</th><th>Level</th></tr><tr><td>3 MHz</td><td>100 ± 20%</td></tr><tr><td>4.5MHz</td><td>100 % (Ref.)</td></tr><tr><td>6 MHz</td><td>100 ± 10%</td></tr><tr><td>8 MHz</td><td>100 ± 20%</td></tr></table>	Freq.	Level	3 MHz	100 ± 20%	4.5MHz	100 % (Ref.)	6 MHz	100 ± 10%	8 MHz	100 ± 20%	
Freq.	Level											
3 MHz	100 ± 20%											
4.5MHz	100 % (Ref.)											
6 MHz	100 ± 10%											
8 MHz	100 ± 20%											

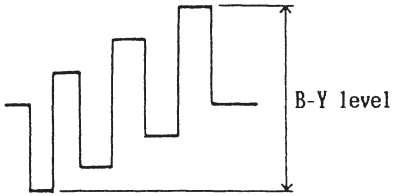
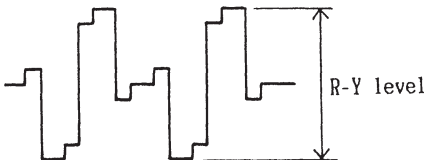
<p>Step 3</p> <ul style="list-style-type: none"> <li>• DT SELECT sw : RP</li> <li>• Play back a color-bar signal on alignment tape CR5-2A.</li> </ul>	<p>TP307/DM-56(F-3)</p> 	<p>Maximize the DC level using a TRACKING control.</p>
<p>Step 4</p> <ul style="list-style-type: none"> <li>• PB. PB/EE sw : PB/EE</li> <li>• MODE; JOG STILL</li> <li>• When the SEARCH STILL mode is entered relative to the DC level at TP306 (on the DM-56 board) in the normal PB mode, adjust the DO pulse detection level until the specification is satisfied.</li> </ul>	<p>TP306/DM-56(F-2)</p>  <p><math>B/A = 1/6</math> (B/A indicates the DO pulse detection level in the SEARCH STILL mode relative to the DC level at TP306 in the normal PB mode.)</p>	<p>RV312/DM-56(F-3)</p> <p>TRIG: TP317/DM-56(F-1)</p>
<p>Step 5</p> <ul style="list-style-type: none"> <li>• DT SELECT sw : RP</li> <li>• Play back a flat field signal on alignment tape CR5-1B.</li> </ul>	<p>TP307/DM-56(F-3)</p> 	<p>Maximize the DC level using a TRACKING control.</p>
<p>Step 6</p> <ul style="list-style-type: none"> <li>• PB. PB/EE sw : PB/EE</li> <li>• MODE: JOG STILL</li> </ul>	<p>TP306/DM-56(F-2)</p>  <p><math>B/A = 1/10</math> (B/A indicates the DO pulse detection level in the SEARCH STILL mode relative to the DC level at TP306 in the normal PB mode.)</p>	<p>RV319/DM-56(F-3)</p> <p>TRIG: TP317/DM-56(F-1)</p>
<p>Step 7</p> <ul style="list-style-type: none"> <li>• Play back a dropout check signal on alignment tape CR5-1B.</li> </ul>	<p>Check that the dropout portion is compensated on the monitor.</p>	

## 12-6. EN-48 BOARD ADJUSTMENT

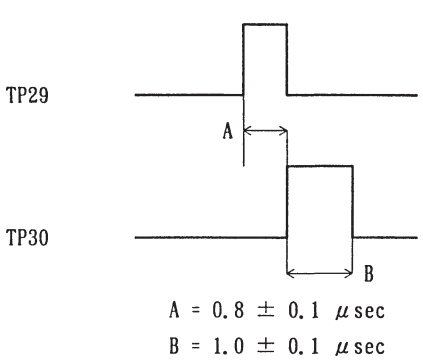
### 12-6-1. DUB R-Y/B-Y Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a color-bar signal on alignment tape CR5-1B.</li> </ul>	DUB/COMPONENT 1 R-Y OUT/connector panel  $R-Y \text{ level} = 0.7 \pm 0.015 \text{ V}$	RV42/EN-48(F-5)
	DUB/COMPONENT 1 B-Y OUT/connector panel  $B-Y \text{ level} = 0.7 \pm 0.015 \text{ V}$	RV33/EN-48(F-5)  TRIG: REF.VIDEO OUT/connector panel

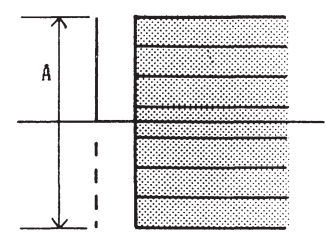
### 12-6-2. COMPONENT 2 B-Y/R-Y Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a color-bar signal on alignment tape CR5-1B.</li> <li>• COMPONENT select sw: COMPONENT-2</li> <li>• After adjustment is completed, set the switch to DUB.</li> </ul>	COMPONENT 2 B-Y OUT/connector panel  $B-Y \text{ level} = 0.7 \pm 0.015 \text{ V}$	RV34/EN-48(F-5)  TRIG: REF.VIDEO OUT/connector panel
	COMPONENT 2 R-Y OUT/connector panel  $R-Y \text{ level} = 0.7 \pm 0.015 \text{ V}$	RV41/EN-48(F-6)

### 12-6-3. Clamp Pulse Position Adjustment

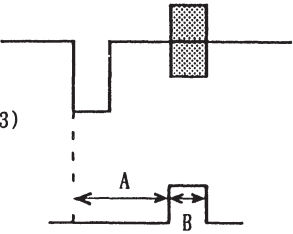
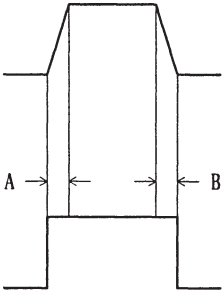
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a color-bar signal to the COMPONENT 2 IN connector.</li> <li>• MODE: EE</li> </ul>	<p>TP29/EN-48(C-1) TP30/EN-48(D-1)</p>  <p><math>A = 0.8 \pm 0.1 \mu\text{sec}</math> <math>B = 1.0 \pm 0.1 \mu\text{sec}</math></p>	<ul style="list-style-type: none"> <li>• Adjustment A RV21/EN-48(D-2)</li> <li>• Adjustment B RV22/EN-48(D-1)</li> </ul>

### 12-6-4. Chroma ID Level Adjustment

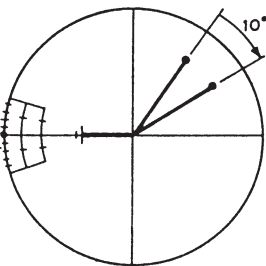
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• CAPSTAN LOCK sw: 4FD</li> <li>• Supply a color-bar signal to the VIDEO IN connector.</li> </ul>	<p>DUB/COMPONENT 1 B-Y OUT/connector panel</p> <p>(WFM)</p>  <p><math>A = 0.7 \pm 0.1 \text{ Vp-p}</math></p>	<p>RV36/EN-48(E-5)</p> <p>TRIG: REF.VIDEO OUT/ connector panel</p>
<ul style="list-style-type: none"> <li>• S2/EN-48: ON</li> <li>• COMPONENT select sw: COMPONENT 2</li> <li>• After adjustment is completed, set S2 on the EN-48 board to OFF and COMPONENT select sw to DUB.</li> </ul>	<p>DUB/COMPONENT 1 B-Y OUT/connector panel</p> <p><math>A = 0.7 \pm 0.1 \text{ Vp-p}</math></p>	<p>RV35/EN-48(F-5)</p> <p>TRIG: REF.VIDEO OUT/ connector panel</p>

\* When the B-Y signal is adjusted in Sections 12-6-1 and 12-6-2, readjust Section 12-6-4.

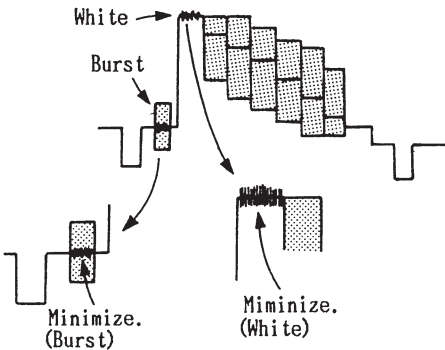
# 12-6-5. Burst Position Adjustment

machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a 75% color-bar signal to the VIDEO IN connector.</li> <li>• MODE:EE</li> </ul>	<p>VIDEO OUT/connector panel</p> <p>TP601/EN-48(B-3)</p>  <p> <math>A = 5.1 \pm 0.1 \mu\text{sec}</math>  <math>B = 2.5 \pm 0.1 \mu\text{sec}</math> </p>	<ul style="list-style-type: none"> <li>●RV12/EN-48(C-2)</li> <li>●RV13/EN-48(C-2)</li> </ul> <p>TRIG: INT/WFM</p>
<p>Step 2</p> <ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a 75% color-bar signal to the VIDEO IN connector.</li> <li>• MODE:EE</li> </ul>	<p>TP24</p> <p>TP28</p>  <p> <math>A = B = \text{minimize}</math> </p>	<ul style="list-style-type: none"> <li>• A</li> <li>●RV27/EN-48(C-2)</li> <li>• B</li> <li>●RV28/EN-48(C-2)</li> </ul>

## 12-6-6. SC Phase Adjustment

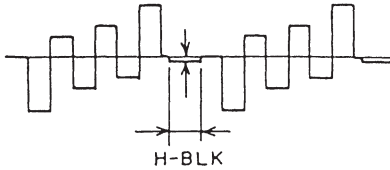
machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• Supply a color-bar signal to the REF VIDEO IN connector.</li> <li>• Fully turn the SC control on the subcontrol panel counterclockwise.</li> <li>• Using RV17 on the EN-48 board, preset to the position in which the burst is locked.</li> <li>• MODE: EE</li> </ul> <p>Step 2</p> <ul style="list-style-type: none"> <li>• Turn the SC control to measure the change.</li> </ul>	<p>VIDEO OUT connector (Terminated in 75 ohms.)</p>  <p>Delay the burst by 10 degrees using RV17. (SCH MODE/WAVEFORM VECTOR MONITOR)</p> <p>The control change should be 360° or more.</p>	<p>RV17/EN-48(D-1)</p>

## 12-6-7. Chroma Carrier Leak Tentative Adjustment

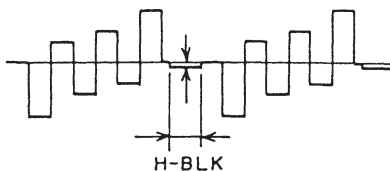
machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• Play back a color-bar signal on alignment tape CR5-1B.</li> </ul>	<p>VIDEO OUT/connector panel</p> 	<ul style="list-style-type: none"> <li>• White portion <ul style="list-style-type: none"> <li>RV2/EN-48(A-5)</li> <li>RV6/EN-48(A-5)</li> </ul> Alternately adjust. </li> <li>• Burst portion <ul style="list-style-type: none"> <li>RV602/EN-48(A-3)</li> </ul> </li> </ul>

When RV6 is used in this adjustment, readjust Section 12-6-10.

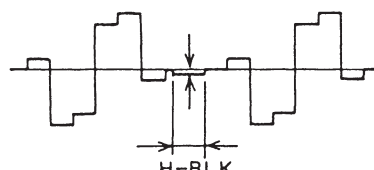
# 12-6-8. COMPONENT 2 B-Y Blanking Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a color-bar signal on alignment tape CR5-1B.</li> </ul>	<p>COMPONENT 2 B-Y OUT/connector panel</p>  <p>Minimize the level difference between the blanking and pedestal portions.</p>	<p>RV30/EN-48(A-4)</p> <p>TRIG: REF.VIDEO OUT/connector panel</p>

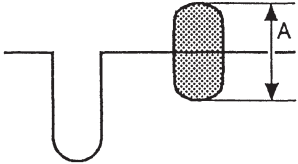
# 12-6-9. DUB B-Y Blanking Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a color-bar signal on alignment tape CR5-1B.</li> </ul>	<p>DUB/COMPONENT 1 B-Y OUT/connector panel</p>  <p>Minimize the level difference between the blanking and pedestal portions.</p>	<p>RV31/EN-48(A-4)</p> <p>TRIG: REF.VIDEO OUT/connector panel</p>

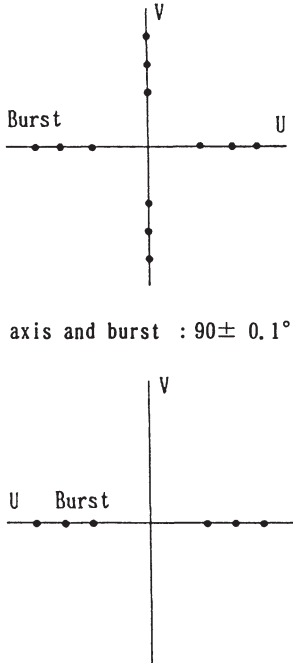
# 12-6-10. DUB R-Y Blanking Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a color-bar signal on alignment tape CR5-1B.</li> </ul>	<p>DUB/COMPONENT 1 R-Y OUT/connector panel</p>  <p>Minimize the level difference between the blanking and pedestal portions.</p>	<p>RV40/EN-48(A-4)</p> <p>TRIG: REF.VIDEO OUT/connector panel</p>

## 12-6-11. Burst Level Adjustment

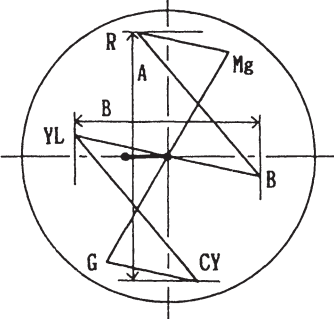
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Supply a color-bar signal to the REF VIDEO IN connector.</li> </ul>	<p>VIDEO OUT 1/connector panel</p> 	<ul style="list-style-type: none"> <li>RV7/EN-48(B-3)</li> <li>SC control/subcontrol panel</li> <li>Alternately adjust.</li> </ul>

## 12-6-12. U-V Phase Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Play back a quad phase signal on alignment tape CR5-1B.</li> </ul>	<p>VIDEO OUT(Terminated in 75 ohms.)</p>  <p>V axis and burst : <math>90 \pm 0.1^\circ</math></p> <p>U axis and burst : <math>0 \pm 0.1^\circ</math></p> <p>Each burst, R-Y, and B-Y dot should be on the axis.</p>	<p>PHASE control/ vectorscope HUE CONTROL/PRESET /subcontrol panel</p> <p>V axis RV203/EN-48(A-2)</p> <p>U axis RV14/EN-48(E-4) HUE CONTROL/PRESET /subcontrol panel</p>



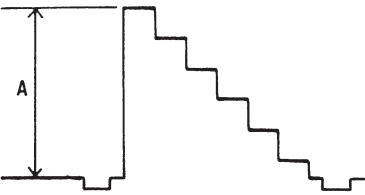
# 12-6-13. Chroma Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a color-bar signal on alignment tape CR5-1B.</li> </ul>	<p>VIDEO OUT 1/connector panel (Terminated in 75 ohms.)</p>  <p>Bring each dot near the center of mark <math>\boxplus</math>.</p>	<ul style="list-style-type: none"> <li>• Using a vectorscope's PHASE control, adjust the burst phase to <math>-180^\circ</math>.</li> <li>• R, Mg, G, CY</li> <li>●RV4/EN-48(A-4)</li> <li>• YL, B</li> <li>●RV1/EN-48(C-5)</li> </ul> <p>Adjust first RV4.</p>

\*1 When RV1 is used in this adjustment, readjust Sections 12-6-8 and 12-6-9.

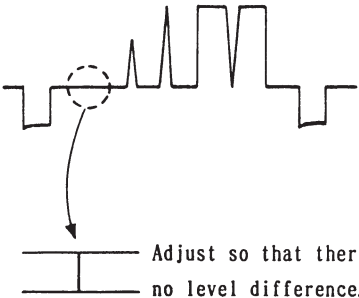
## 12-7. VO-18 BOARD ADJUSTMENT

### 12-7-1. Input Level Adjustment

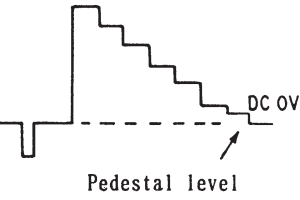
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a color-bar signal on alignment tape CR5-1B.</li> </ul>	<p>TP2/VO-18(C-6)</p>  <p><math>A = 1.0 \pm 0.015 \text{ V}</math></p>	<p>RV1/VO-18(B-7)</p> <p>TRIG: REF. VIDEO OUT/ connector panel</p>

\* After this adjustment is completed, adjust Sections 12-7-4, 12-7-5, and 12-7-7.

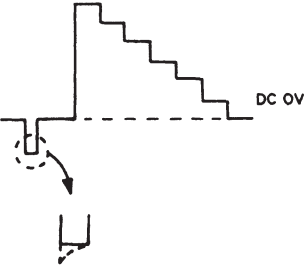
### 12-7-2. Pedestal Level Adjustment

machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a pulse &amp; bar signal to the DUB/COMPONENT 1 IN connector.</li> <li>• Set the SETUP VR on the subpanel to PRESET.</li> <li>• MODE: EE</li> </ul>	<p>VIDEO OUT 1/connector panel Using WFM</p>  <p>Adjust so that there is no level difference.</p>	<p>RV2/VO-18(A-5)</p> <p>TRIG: REF. VIDEO OUT/ connector panel</p>

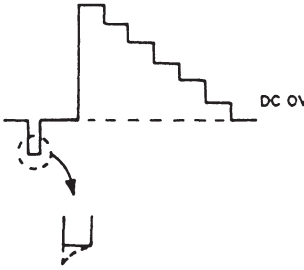
### 12-7-3. Y DC Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• S1/EN-48: ON(B/W mode)</li> <li>• Play back color-bar signal on the alignment tape CR5-1B.</li> <li>• After adjustment is completed, set S1 on the EN-48 board to OFF.</li> </ul>	<p>VIDEO OUT 1/connector panel</p>  <p>Pedestal level</p> <p>Set the pedestal level to <math>0 \pm 0.01 \text{ Vdc}</math>.</p>	<p>RV7/VO-18(F-6)</p> <p>TRIG: REF. VIDEO OUT/ connector panel</p>

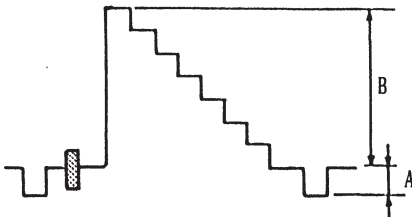
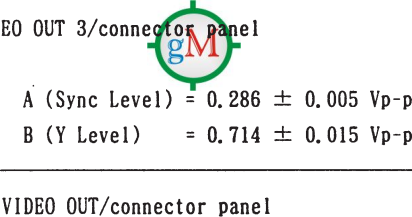
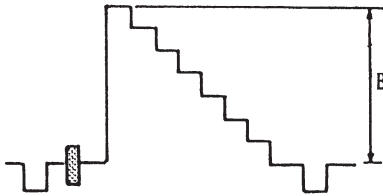
#### 12-7-4. Composite Sync Waveform Shaping Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• S1/EN-48: ON(B/W mode)</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• Supply a composite color-bar signal to the VIDEO IN connector.</li> <li>• MODE: EE</li> </ul> <p>• After adjustment is completed, set S1 on the EN-48 board to OFF.</p>	<p>VIDEO OUT 1/connector panel</p>  <p>Adjust to be most rectangular.</p>	<p>●LV2/V0-18(F-5)</p> <p>TRIG: REF.VIDEO OUT/ connector panel</p>

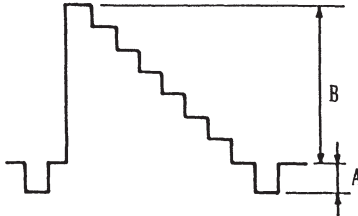
#### 12-7-5. Component Sync Waveform Shaping Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• S1/EN-48: ON</li> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a color-bar signal to the DUB/COMPONENT 1 IN connector.</li> <li>• MODE: EE</li> </ul> <p>• After adjustment is completed, set S1 on the EN-48 board to OFF.</p>	<p>DUB COMPONENT 1 Y OUT/connector panel</p>  <p>Adjust to be most rectangular.</p>	<p>●LV1/V0-18(E-4)</p> <p>TRIG: REF.VIDEO OUT/ connector panel</p>

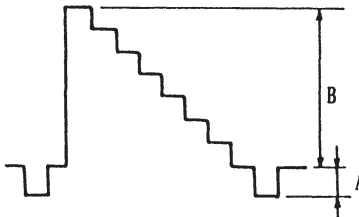
# 12-7-6. Video Output Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• S1/EN-48: ON</li> <li>• Play back a color-bar signal on alignment tape CR5-1B.</li> </ul>	<p>Step 1</p> <p>VIDEO OUT 1/connector panel</p>  <p>A (Sync Level) = <math>0.286 \pm 0.005</math> Vp-p</p> <p>B (Y Level) = <math>0.714 \pm 0.015</math> Vp-p</p>	<ul style="list-style-type: none"> <li>• Sync Level RV10/V0-18(E-5)</li> <li>• Y Level RV5/V0-18(E-6)</li> </ul> <p>TRIG: REF.VIDEO OUT/ connector panel</p>
	<p>Step 2</p> <p>VIDEO OUT 2/connector panel</p> <p>A (Sync Level) = <math>0.286 \pm 0.005</math> Vp-p</p> <p>B (Y Level) = <math>0.714 \pm 0.015</math> Vp-p</p>	<ul style="list-style-type: none"> <li>• Sync Level RV16/V0-18(F-6)</li> <li>• Y Level RV20/V0-18(G-6)</li> </ul>
	<p>Step 3</p> <p>VIDEO OUT 3/connector panel</p>  <p>A (Sync Level) = <math>0.286 \pm 0.005</math> Vp-p</p> <p>B (Y Level) = <math>0.714 \pm 0.015</math> Vp-p</p>	<ul style="list-style-type: none"> <li>• Sync Level RV17/V0-18(F-5)</li> <li>• Y Level RV13/V0-18(G-5)</li> </ul>
	<p>TV VIDEO OUT/connector panel</p>  <p>B = (Y Level) = <math>0.714 \pm 0.015</math> Vp-p</p>	<ul style="list-style-type: none"> <li>RV21/V0-18(H-4)</li> </ul>
<ul style="list-style-type: none"> <li>• After adjustment is completed, set S1 on the EN-48 board to OFF.</li> </ul>		

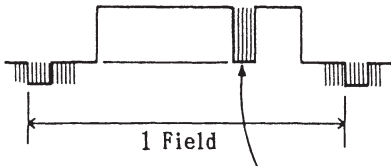
### 12-7-7. DUB Y Output Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a color-bar signal on alignment tape CR5-1B.</li> </ul>	<p>DUB/COMPONENT 1 Y OUT/connector panel</p>  <p>A (Sync Level) = <math>0.286 \pm 0.005</math> Vp-p B (Y Level) = <math>0.714 \pm 0.015</math> Vp-p</p>	<ul style="list-style-type: none"> <li>• Y Level ⌚RV702/V0-18(C-3)</li> <li>• Sync Level ⌚RV11/V0-18(E-4)</li> </ul> <p>TRIG: REF.VIDEO OUT/ connector panel</p>


### 12-7-8. COMPONENT 2 Y Output Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a color-bar signal on alignment tape CR5-1B.</li> </ul>	<p>COMPONENT 2 Y OUT/connector panel</p>  <p>A (Sync Level) = <math>0.286 \pm 0.005</math> Vp-p B (Y Level) = <math>0.714 \pm 0.015</math> Vp-p</p>	<ul style="list-style-type: none"> <li>• Y Level ⌚RV9/V0-18(A-4)</li> <li>• Sync Level ⌚RV19/V0-18(A-3)</li> </ul> <p>TRIG: REF.VIDEO OUT/ connector panel</p>

### 12-7-9. Character Pedestal Adjustment

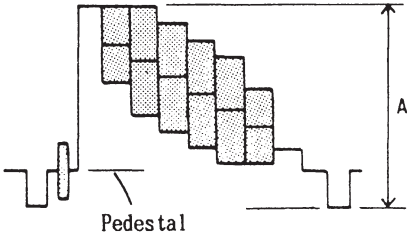
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a color-bar signal to the COMPONENT 2 IN connector.</li> </ul>	<p>VIDEO OUT 3/connector panel</p>  <p>Eliminate the level difference at the pedestal portion.</p> <p>Level difference <math>\leq 0.05</math> V</p>	<ul style="list-style-type: none"> <li>⌚RV14/V0-18(A-6)</li> </ul>

## 12-7-10. VISC Level Adjustment

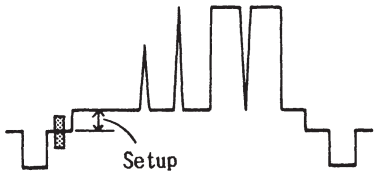

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• CAPSTAN LOCK sw: 4FD</li> <li>• Supply a color-bar signal to the VIDEO IN connector.</li> </ul>	<p>Step 1</p> <p>DUB/COMPONENT 1 Y OUT/connector panel</p> <p>WAVEFORM MONITOR</p>  <p>S4/VO-18: ON</p> <p>A (SETUP level) = 7.5 IRE</p> <p>B (VISC level) = 40 IRE</p>	<ul style="list-style-type: none"> <li>• SETUP level</li> <li>• RV701/VO-18(B-3)</li> <li>• VISC level</li> <li>• RV700/VO-18(A-3)</li> </ul> <p>TRIG: REF.VIDEO OUT/connector panel</p>
	<p>Step 2</p> <p>COMPONENT 2 Y OUT/connector panel</p> <p>WAVEFORM MONITOR</p> <p>S5/VO-18: ON</p> <p>B (VISC level) = 40 IRE</p> <p>A (SETUP level) = 7.5 IRE</p>	<ul style="list-style-type: none"> <li>• SETUP level</li> <li>• RV703/VO-18(B-3)</li> <li>• VISC level</li> <li>• RV704/VO-18(B-3)</li> </ul>

\* When adjustments are made in Sections 12-7-7 and 12-7-8, readjust Section 12-7-10.

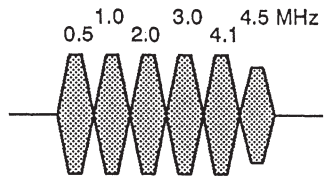
## 12-7-11. Bypass Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• Supply a 75% color-bar signal to the VIDEO IN connector.</li> <li>• TBC BYPASS sw/subcontrol panel: ON</li> </ul>	<p>VIDEO OUT 1/connector panel</p>  <p>A (Composite video level) = <math>1.0 \pm 0.015</math> V</p> <p>Set the pedestal level to <math>0 \pm 0.05</math> Vdc.</p>	<ul style="list-style-type: none"> <li>• Video Level</li> <li>• RV22/VO-18(E-7)</li> <li>• Pedestal Level</li> <li>• RV23/VO-18(E-6)</li> </ul> <p>TRIG: REF.VIDEO OUT/connector panel</p>

### 12-7-12. Setup Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• S1/EN-48: ON(B/W mode)</li> <li>• SETUP PRESET/MANUAL sw: MANUAL</li> <li>• Fully turn the SETUP control counterclockwise.</li> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a pulse &amp; bar signal to the DUB/COMPONENT 1 IN connector.</li> </ul>	<p>VIDEO OUT 1/connector panel</p> <p>Step 1</p>  <p>SETUP Level = <math>+15 \pm \frac{1}{2}</math> IRE</p>	<p>RV4/V0-18(B-6)</p> <p>TRIG: REF.VIDEO OUT/ connector panel</p>
<ul style="list-style-type: none"> <li>• Fully turn the SETUP control counterclockwise.</li> <li>• After adjustment is completed, set the SETUP PRESET/MANUAL switch to PRESET, and S1 on the EN-48 board to OFF.</li> </ul>	<p>Step 2</p>  <p>UNDER SETUP level = <math>-12 \text{ IRE} \pm \frac{1}{2} \text{ IRE}</math></p>	<p>RV501/V0-18(C-5)</p>

### 12-7-13. Frequency Response Compensation

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• S1/EN-48: ON</li> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a wideband sweep signal to the DUB/COMPONENT 1 IN connector.</li> <li>• After adjustment is completed, set S1 on the EN-48 board to OFF.</li> </ul>	<p>TP100/TBC-7(E-1)</p> <p>VIDEO OUT 1/connector panel</p> <p>Compare the frequency response.</p>  <p>Make the 4.1MHz level equal with 0.5MHz as reference(within 2%).</p>	<p>CV1/V0-18(D-5)</p>





## SECTION 13

### TBC ALIGNMENT

#### 【Switch Setting】

##### • Subcontrol Panel

SETUP switch : PRESET  
 Y/C DELAY switch : PRESET  
 HUE switch : PRESET  
 TBC CONTROL switch : INT  
 VIDEO INPUT switch : AUTO  
 TBC BYPASS switch : OFF

#### 【Equipment Required】

- Dual-trace oscilloscope
- NTSC signal generator (Tektronix 1410 or the equivalent)
- Waveform vector monitor (Tektronix 1750 or the equivalent)
- Frequency counter
- Alignment tape CR5-2A or CR5-1B

##### • Level Control Panel

INPUT SELECT switch : COMPOSITE

##### • Function Control Panel

PB • PB/EE switch : PB/EE

##### • Connector Panel

REF VIDEO switch : EXT  
 REF VIDEO 75Ω termination : ON

CR5-2A (8-960-097-44) Contents

TIME min, sec	VIDEO TRACK
0:00	75% Color Bars
3:00	Multi Burst Y: 0.5, 1, 2, 3, 4.1, 4.5 MHz C: 0.2, 0.5, 1, 1.5 MHz
6:00	
9:00	Bowtie & 12.5T
11:00	Pulse & Bar C: No signal
13:00	Quad Phase
15:00	COMPOSITE Monoscope Video Phase, Diehdral

CR5-1B (8-960-096-41) Contents

TIME min, sec	VIDEO TRACK	AFM
0:00	RF Sweep	No Signal
2:00		
5:00	60% H Sweep (CTDM)	
8:00	Pulse & Bar (CTDM)	
11:00	Multi Burst	
14:00	Pulse & Bar	
16:30	75% Color Bars	400Hz Sine Wave 25KHz Deviation
17:00		75KHz Deviation
19:00	50% Bowtie & 12.5T	No Signal
22:00	Line 17 Signal	
24:00	Quad Phase	
26:00	Flat Field	
28:00	75% Color Bars with Dropout	
30:00	Composite V Sweep with VISC	

【Connection】

Fig. 1

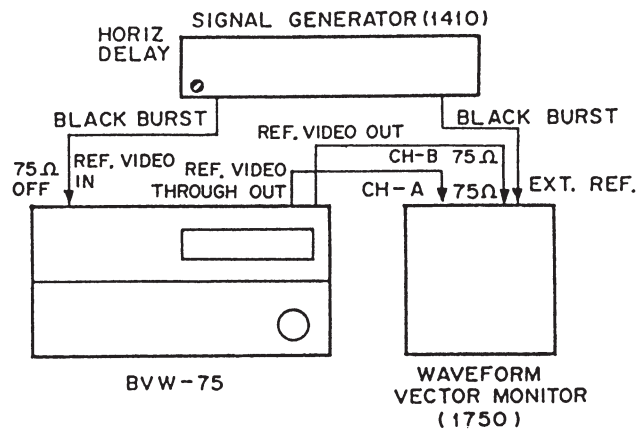


Fig. 2

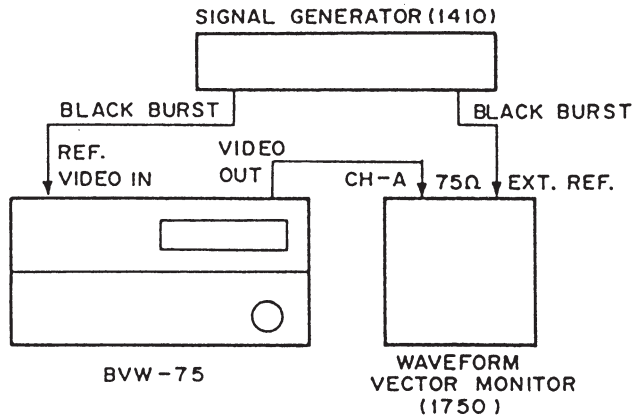


Fig. 3

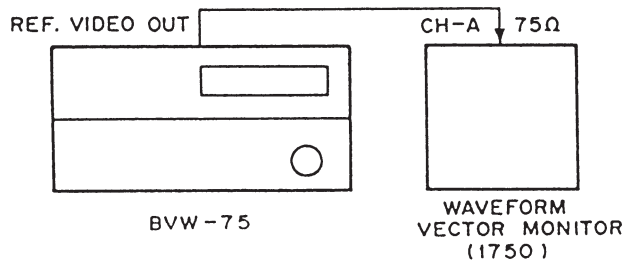
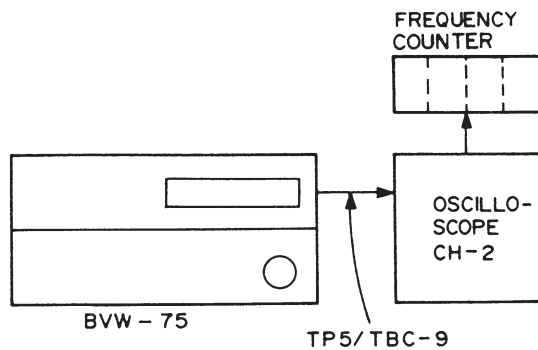
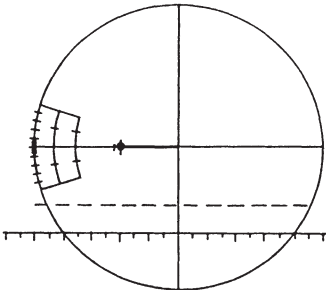
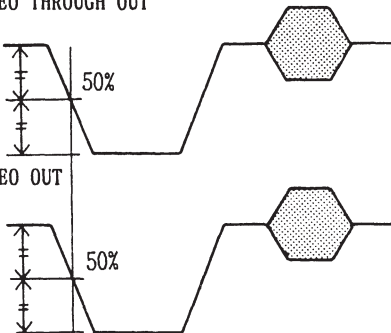
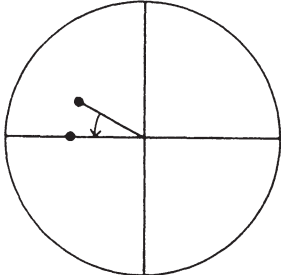
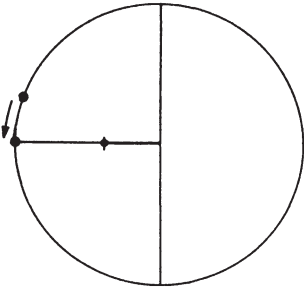


Fig. 4



# 13-1. SYNC PHASE ADJUSTMENT

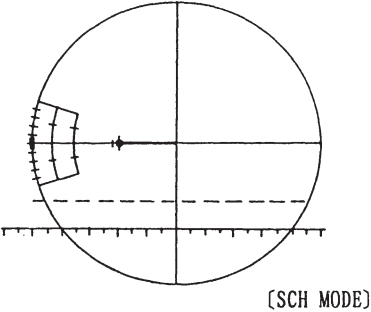
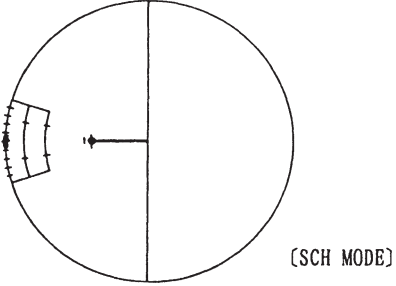
machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>REF VIDEO IN 75 <math>\Omega</math> sw: OFF</li> <li>Terminate the waveform vector monitor CH-A in 75 ohms and set the EXT REF button to ON.</li> <li>CONNECTION: Fig. 1</li> </ul>	<p>CH-A: REF VIDEO THROUGH OUT</p>  <p>[SCH MODE]</p> <ul style="list-style-type: none"> <li>Adjust the burst phase using the waveform vector monitor's PHASE control and remove the SCH error using the signal generator's HORIZ. DELAY VR.</li> </ul>	
<p>Step 2 ROUGH ADJ.</p> <ul style="list-style-type: none"> <li>REF VIDEO IN 75 <math>\Omega</math> sw: OFF</li> <li>Set the EXT REF button of the waveform vector monitor to ON.</li> <li>Set the waveform monitor to the WFM mode.</li> <li>CONNECTION: Fig. 1</li> </ul>	<p>CH-A: REF VIDEO THROUGH OUT</p>  <p>CH-B: REF VIDEO OUT</p> <p>Make the phase same.</p>	RV2/TBC-9(D-5)
<p>Step 3</p> <ul style="list-style-type: none"> <li>Set the waveform monitor to the SCH mode.</li> </ul>	<p>CH-B: REF VIDEO OUT</p>  <p>Align the burst signal phase of the VTR's REF VIDEO OUT connector with the phase of the black burst signal sent from a signal generator.</p>	RV5/TBC-9(D-5)

Step 4 FINE ADJ.	<p>CH-B: REF VIDEO OUT</p>  <p>Adjust the SCH according to the specification.</p>	RV2/TBC-9(D-5)
------------------	--	----------------

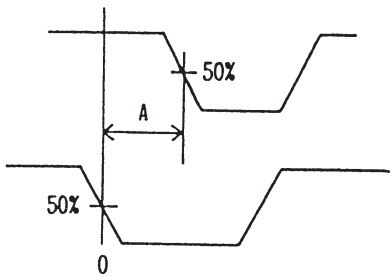
13-2. INT SUBCARRIER FREQUENCY ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Set the REF VIDEO IN connector to OPEN.</li> <li>CONNECTION; Fig. 4</li> </ul>	<p>TP5/TBC-9(B-5)</p> <p>SC frequency <math>3,579,545 \pm 10 \text{ Hz}</math></p>	RV1/TBC-9(D-5)

### 13-3. INT SUBCARRIER PHASE ADJUSTMENT

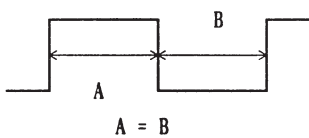
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Set the REF VIDEO IN connector to OPEN.</li> <li>• Terminate the waveform vector monitor's CH-A in 75 ohms and set the EXT REF button to OFF.</li> <li>• CONNECTION: Fig. 3</li> </ul>	<p>Step 1</p> <p>CH-A : REF. VIDEO OUT</p>  <p>[SCH MODE]</p> <ul style="list-style-type: none"> <li>• Adjust the burst phase using the waveform vector monitor's PHASE control.</li> </ul>	
	<p>Step 2</p> <p>CH-A : REF. VIDEO OUT</p>  <p>[SCH MODE]</p> <p>SCH = <math>0 \pm 1^\circ</math></p> <p>Adjust the SCH's luminance spot according to the specification.</p>	<p>RV4/TBC-9(E-5)</p>

### 13-4. SV SYNC ADJUSTMENT

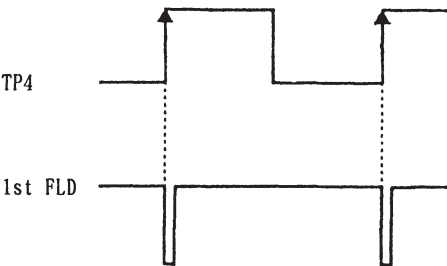
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Supply a black burst signal to the REF VIDEO IN connector.</li> <li>MODE: EE</li> </ul>		
<b>Step 1</b> <ul style="list-style-type: none"> <li>INPUT SELECT sw: Y-R, B</li> </ul>	TP7/TBC-9(B-6)  $A = -210 \text{ nsec}$	RV3/TBC-9(C-4)
<b>Step 2</b> <ul style="list-style-type: none"> <li>INPUT SELECT sw: COMPOSITE</li> </ul>	$A = +770 \text{ nsec}$	RV15/TBC-9(C-3)

Note: RV3 and RV15 adjustments are performed in a 70 nsec step only. Adjustment is thus made to obtain almost the same value as the specification.

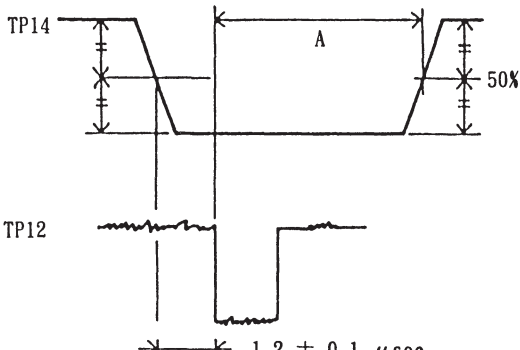
### 13-5. 1/2H BLK WIDTH ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Supply a black burst signal to the REF VIDEO IN connector.</li> <li>MODE: EE</li> </ul>	TP9/TBC-9(B-1)  $A = B$	RV11/TBC-9(B-2)  TRIG: TP9/TBC-9(B-1)

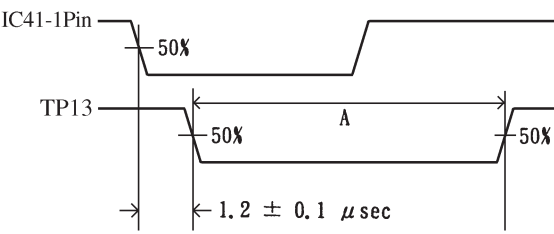
### 13-6. REF 1st FLD ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Supply a black burst signal to the REF VIDEO IN connector.</li> <li>MODE: EE</li> </ul>	<p>CH-1: TP4/TBC-9(D-4) CH-2: 1st FLD/1411</p>  <p>• Adjust the 1st FLD pulse so that appears at the falling edge of TP4.</p>	<p>RV12/TBC-9(C-4)</p>

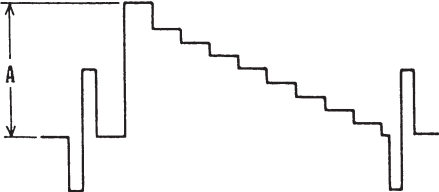
### 13-7-1. Y BLANKING WIDTH ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Fully turn RV13 clockwise.</li> <li>INPUT SELECT sw: COMPOSITE</li> <li>Supply a color-bar signal to the VIDEO IN connector.</li> <li>MODE: EE</li> </ul>	<p>TP14/TBC-9(B-4) TP12/TBC-9(A-3)</p>  <p><math>A = 9.2 \pm 0.1 \mu\text{sec}</math></p>	<p>RV14/TBC-9(B-4)</p> <p>TRIG: INT</p>

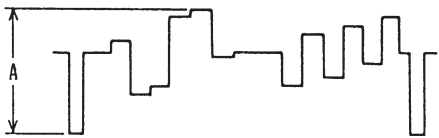
### 13-7-2. C BLANKING WIDTH ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>INPUT SELECT sw: COMPOSITE</li> <li>Supply a color-bar signal to the VIDEO IN connector.</li> <li>MODE: EE</li> </ul>	<p>IC41-1Pin/TBC-9(B-3) TP13/TBC-9(B-4)</p>  <p><math>A = 9.4 \pm 0.1 \mu\text{sec}</math></p>	<p>RV13/TBC-9(B-4)</p> <p>TRIG: INT</p>

### 13-8. Y-AD IN LEVEL ADJUSTMENT

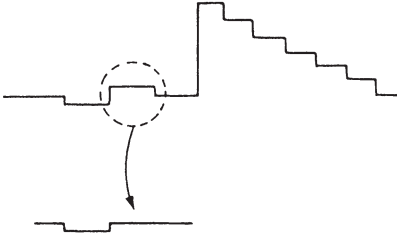
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a color-bar signal on alignment tape CR5-1B.</li> </ul>	<p>TP101/TBC-7(G-2)</p>  <p><math>A = 1.60 \pm 0.05 \text{ Vp-p}</math></p>	<p>RV100/TBC-7(F-1)</p> <p>TRIG: TP101/TBC-7(G-2)</p>

### 13-9. C-AD IN LEVEL ADJUSTMENT

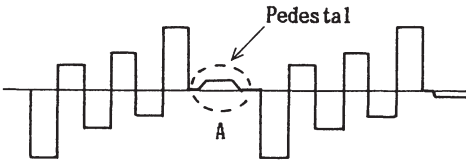
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a color-bar signal on alignment tape CR5-1B.</li> </ul>	<p>TP401/TBC-7(C-2)</p>  <p><math>A = 1.30 \pm 0.05 \text{ Vp-p (yellow level)}</math></p>	<p>RV400/TBC-7(C-2)</p> <p>TRIG: TP401/TBC-7(C-2)</p>




### 13-10. Y-AD IN PEDESTAL CLAMP ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a color-bar signal on alignment tape CR5-1B.</li> </ul>	<p>TP201/TBC-8(G-1)</p>  <p>No level difference should appear.</p>	<p>RV101/TBC-7(F-2)</p> <p>TRIG: TP201/TBC-7(H-5)</p>

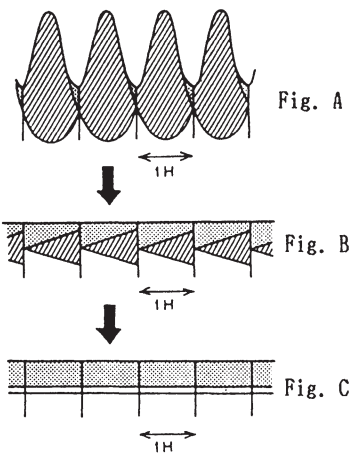

### 13-11. C-AD IN PEDESTAL CLAMP LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a color-bar signal on alignment tape CR5-1B.</li> </ul>	<p>TP501/TBC-8(C-1)</p>  <p>No level difference should appear at portion A.</p>	<p>RV401/TBC-7(C-2)</p> <p>TRIG: TP501/TBC-8(C-1)</p>

### 13-12. Y NORMAL VCO ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<b>Step 1</b> <ul style="list-style-type: none"> <li>Supply a 75% color-bar signal to the COMPONENT 2 IN connector.</li> <li>INPUT SELECT sw: Y-R, B</li> <li>Supply a black burst signal to the REF VIDEO IN connector.</li> <li>MODE: EE</li> </ul>	TP207/TBC-7(J-5)  $2.5 \pm 0.1 \text{ Vdc}$	
<b>Step 2</b>	TP201/TBC-7(H-5)  Above value $\pm 0.1 \text{ Vdc}$	 LV200/TBC-7(H-5)

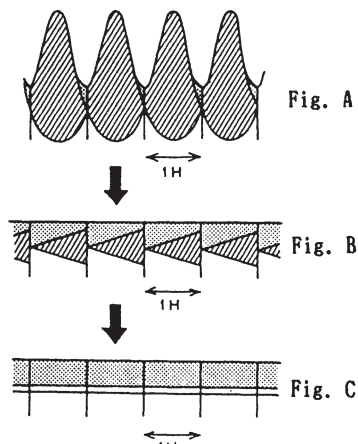
### 13-13. Y-WCK FREQUENCY ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Supply a 75% color-bar signal to the COMPONENT 2 IN connector.</li> <li>Supply a black burst signal to the REF VIDEO IN connector.</li> <li>INPUT SELECT sw: Y-R, B</li> <li>MODE: EE</li> <li>Set the range of the oscilloscope to 1VDC, 20<math>\mu</math>s/DIV and measure it in the CH-1/CH-2 (INT) ADD mode.</li> <li>S301/SY-64: OFF</li> </ul>	TP3/TBC-9(B-3) TP203/TBC-7(G-4)  Inverted and added signal waveform at TP3/TBC-9 and TP203/TBC-7   <p>Fig. A</p> <p>Fig. B</p> <p>Fig. C</p> <p>Minimize the added waveform using the SYNC FINE VR on the subcontrol panel as shown in Fig. B and make the frequency coincide each other using RV201 as shown in Fig. C (if the lines are parallel, the frequency coincides).</p>	SYNC FINE VR/Subcontrol panel (PHASE adjustment)  RV201/TBC-7(F-7) (FREQUENCY adjustment)  TRIG: TP1/TBC-9(D-5)

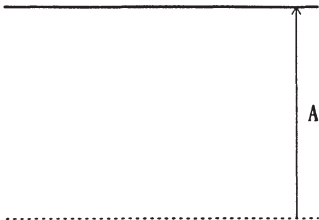
### 13-14. C NORMAL VCO ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<b>Step 1</b> <ul style="list-style-type: none"> <li>• Supply a color-bar signal to the COMPONENT 2 IN connector.</li> <li>• Supply a black burst signal to the REF VIDEO IN connector.</li> <li>• INPUT SELECT sw: Y-R, B</li> <li>• MODE: EE</li> </ul>	TP506/TBC-7(B-6)  $2.5 \pm 0.1 \text{ Vdc}$	
<b>Step 2</b>	TP501/TBC-7(B-5)  Above value $\pm 0.1 \text{ Vdc}$	⊗ LV500/TBC-7(B-5)

### 13-15. C-WCK FREQUENCY ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 75% color-bar signal to the COMPONENT 2 IN connector.</li> <li>• Supply a black burst signal to the REF VIDEO IN connector.</li> <li>• INPUT SELECT sw: Y-R, B</li> <li>• MODE: EE</li> <li>• S302/SY-64(G-8): OFF</li> <li>• Set the range of the oscilloscope to 1VDC, 20<math>\mu</math>s/DIV and measure it in the CH-1/CH-2 (INT) ADD mode.</li> </ul>	TP3/TBC-9(B-2) TP502/TBC-7(C-5)  Inverted and added signal waveform at TP3/TBC-9 and TP502/TBC-7   <p>Fig. A</p> <p>Fig. B</p> <p>Fig. C</p>	SYNC FINE VR/subcontrol panel (PHASE adjustment) ⊗ RV501/TBC-7(A-2) (FREQUENCY adjustment)
<ul style="list-style-type: none"> <li>• After adjustment is completed, set S302 to the former position.</li> </ul>	Minimize the added waveform using the SYNC FINE VR on the subcontrol panel as shown in Fig. B and make the frequency coincide each other using RV501 as shown in Fig. C (if the lines are parallel, the frequency coincides).	TRIG: TP1/TBC-9(D-5)

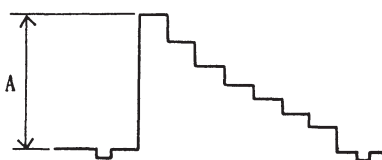
### 13-16. Y-WCK FRB. ERROR VOLTAGE ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• PB, PB/EE sw: PB</li> <li>• S200/TBC-7: OFF (OFF: Right side)</li> <li>• S1/EN-48: OFF (OFF: Left side)</li> <li>• Play back a color-bar signal on alignment tape CR5-1B in the SEARCH REV <math>\times 24</math> mode.</li> <li>• After adjustment is completed, set the PB, PB/EE switch to PB/EE. Set S200 on the TBC-7 board and S1 on the EN-48 board to ON.</li> </ul>	<p>TP202/TBC-7(J-7)</p>  <p><math>A = 6.0 \pm 0.1 \text{ Vdc}</math></p>	<p>RV201/TBC-7(J-4)</p>

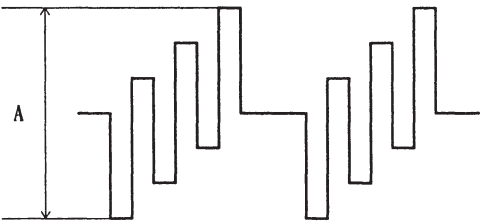
### 13-17. Y FFB OFFSET ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• Turn S200 on the TBC-7 board to OFF (right side), and S1 on the EN-48 board to OFF (left side).</li> <li>• Play back a color-bar signal on alignment tape CR5-1B into the SEARCH REV <math>\times 5</math> mode.</li> </ul>	<p>TP202/TBC-7(J-7)</p> <p><math>3.5 \pm 0.1 \text{ Vdc}</math></p>	<p>RV202/TBC-7(J-7)</p>
<p>Step 2</p> <ul style="list-style-type: none"> <li>• Play back a color-bar signal on alignment tape CR5-1B into the SEARCH FWD <math>\times 5</math> mode.</li> <li>• After adjustment is completed, set S200 on the TBC-7 board and S1 on the EN-48 board to the former position.</li> </ul>	<p>TP202/TBC-7(J-7)</p> <p><math>7.2 \pm 0.1 \text{ Vdc}</math></p>	<p>RV203/TBC-7(G-4)</p>

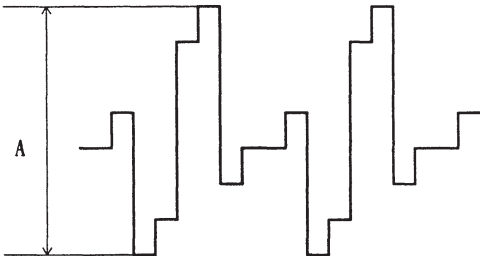
### 13-18. Y LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a black burst signal to the REF VIDEO IN connector.</li> <li>• Play back a color-bar signal on alignment tape CR5-1B.</li> </ul>	<p>TP201/TBC-8(G-1)</p>  <p><math>A = 1.0 \pm 0.01 \text{ Vp-p}</math></p>	<p>RV200/TBC-8(G-1)</p> <p>TRIG: TP201/TBC-8(G-1)</p>

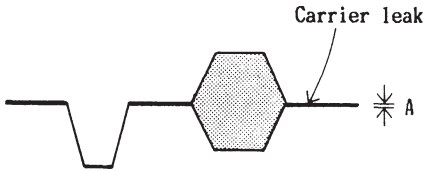
### 13-19. C LEVEL ADJUSTMENT (B-Y)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a black burst signal to the REF VIDEO IN connector.</li> <li>• Play back a color-bar signal on alignment tape CR5-1B.</li> </ul>	<p>TP501/TBC-8(C-1)</p>  <p><math>A = 0.9 \pm 0.02 \text{ Vp-p}</math></p>	<p>RV500/TBC-8(F-1)</p> <p>TRIG: TP1/TBC-9(D-5)</p>

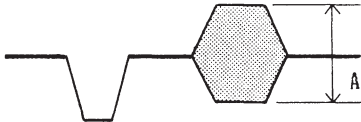
### 13-20. C LEVEL ADJUSTMENT (R-Y)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a black burst signal to the REF VIDEO IN connector.</li> <li>• Play back a color-bar signal on alignment tape CR5-1B.</li> </ul>	<p>TP503/TBC-8(D-1)</p>  <p><math>A = 0.9 \pm 0.02 \text{ Vp-p}</math></p>	<p>RV502/TBC-8(F-1)</p> <p>TRIG: TP1/TBC-9(D-5)</p>

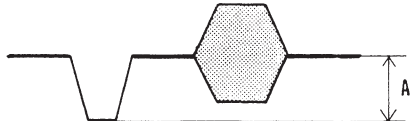
### 13-21. REF VIDEO OUT CARRIER BALANCE ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a black burst signal to the REF VIDEO OUT connector.</li> <li>• CONNECTION: Fig.2</li> </ul>	<p>CH-A: REF VIDEO OUT</p>  <p>A : Minimize (2 IRE or less)</p>	<p>RV8/TBC-9(D-6)</p>

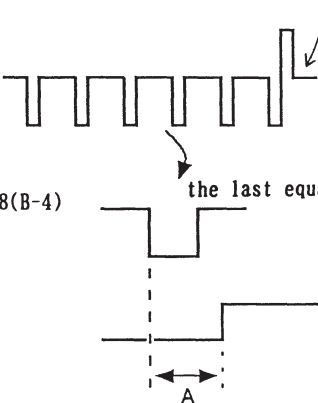
### 13-22. REF VIDEO OUT BURST LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a black burst signal to the REF VIDEO IN connector.</li> <li>• CONNECTION: Fig.2</li> </ul>	<p>CH-A: REF VIDEO OUT</p>  <p>A = 40 ± 1 IRE</p>	<p>RV9/TBC-9(D-6)</p>

### 13-23. SYNC LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a black burst signal to the REF VIDEO IN connector.</li> <li>• CONNECTION: Fig.2</li> </ul>	<p>CH-A: REF VIDEO OUT</p>  <p>A = 40 ± 1 IRE</p>	<p>RV10/TBC-9(C-7)</p>

# 13-24. DT SWITCHING PULSE ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a black burst signal to the REF VIDEO IN connector.</li> <li>• Play back a color-bars signal on alignment tape CR5-1B.</li> <li>• DT SELECT sw: VAR</li> </ul>	<p>TP100/TBC-7(E-1)</p> <p>the first REF. SYNC</p>  <p>TP601/TBC-8(B-4)</p> <p>the last equalizer pulse</p> <p>A</p> <p><math>A = 5.0 \pm 1.0 \mu\text{sec}</math></p>	<p>RV601/TBC-8(H-7)</p>

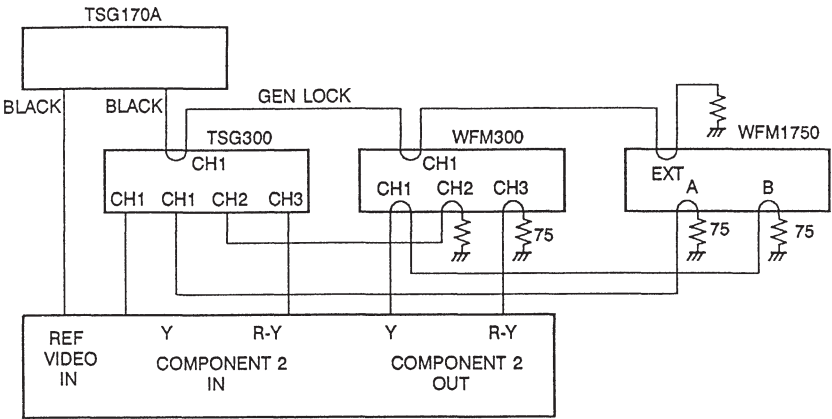




# **SECTION 14** **OVERALL VIDEO ALIGNMENT**

## **14-1. VIDEO PHASE ADJUSTMENT**

**【Connection】**



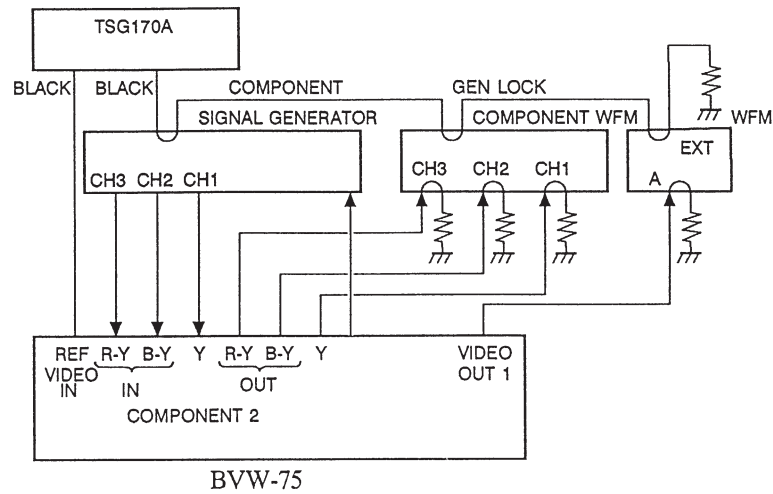
CAPSTAN LOCK switch: 2  
 SYNC control/subcontrol panel: Mechanical center

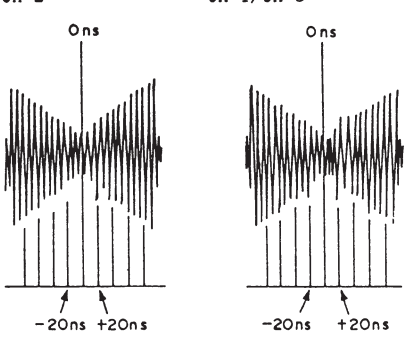
### **14-1-1. PB Component Video Phase Adjustment**

machine conditions for adjustment	specifications	adjustments
<p><b>Step 1</b></p> <ul style="list-style-type: none"> <li>• Connect the CH-A of the waveform vector monitor to the CH-1(Y) of the component signal generator.</li> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Play back a bowtie signal on alignment tape CR5-1B.</li> </ul>	<p>COMPONENT 2 Y OUT /connector panel (SCH MODE/WAVEFORM VECTOR MONITOR)</p> <p>CH-A                      CH-B</p> <p>Align the sync phase in CH-B with that in CH-A.</p>	<p>SYNC control/ subcontrol panel (Using a FINE control)</p>
<p><b>Step 2</b></p>	<p>DUB Y OUT/connector panel (WFM MODE/WAVEFORM VECTOR MONITOR)</p> <p>CH-A                      CH-B</p> <p>Check that the sync phase in CH-A and CH-B is in phase.</p>	<p>TRIG: EXT MODE/WAVEFORM VECTOR MONITOR</p>
<p><b>Step 3</b></p>	<p>COMPONENT 2 Y OUT /connector panel (BOWTIE MODE/WFM)</p> <p>CH-1/CH-3</p> <p>Adjust the CH-1/CH-3 dip point to the center marker. (0 ± 20 nsec)</p>	<p>RV200/TBC-7(J-3)</p>

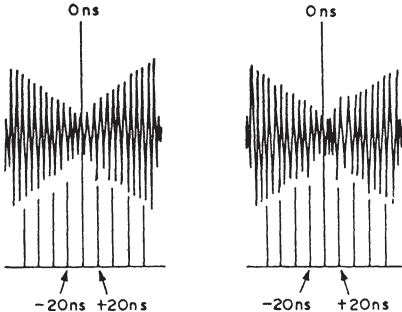
14-1-2. PB Component Y/C, C/C Delay Adjustment

【Connection】

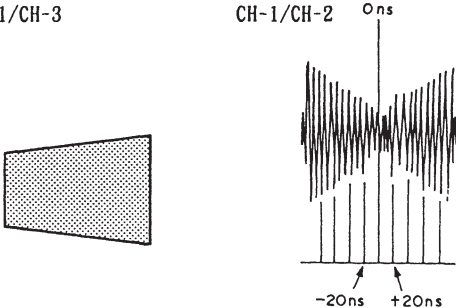


machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"><li>• Play back a bowtie signal on alignment tape CR5-1B.</li></ul>	<p>COMPONENT 2 OUT/connector panel (BOWTIE MODE/COMPONENT WFM)</p> <p>CH-1/CH-2                      CH-1/CH-3</p>  <p>The DIP point should be <math>0 \pm 20</math> nsec.</p>	<ul style="list-style-type: none"><li>• CH-1/CH-2 ●RV500/TBC-7(C-7)</li><li>• CH-1/CH-3 ●RV501/TBC-8(F-1) CHROMA control/ subcontrol panel</li></ul> <p>TRIG: EXT</p>


### 14-1-3. Oxide PB Component Y/C Delay Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a bowtie signal on alignment tape CR5-2A.</li> </ul>	<p>COMPONENT 2 OUT/connector panel (BOWTIE MODE/COMPONENT WFM)</p> <p>CH-1/CH-2                      CH-1/CH-3</p>  <p>The DIP point should be <math>0 \pm 20</math> nsec.</p>	<ul style="list-style-type: none"> <li>• CH-1/CH-2</li> <li>• RV503/TBC-7(D-5)</li> <li>CHROMA control/ subcontrol panel</li> </ul> <p>TRIG: EXT</p>


### 14-1-4. REC Component Video Phase Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• CAPSTAL LOCK sw: 2FD</li> <li>• MODE: EE</li> <li>• Supply a bowtie signal to the DUB/COMPONENT 1 IN connector.</li> </ul> <p>• Connect the WFM and signal generator as shown in Sec 14-1-1.</p>	<p>COMPONENT 2 Y OUT/connector panel (BOWTIE MODE/WFM)</p> <p>CH-1/CH-3                      CH-1/CH-2</p>  <p>Adjust the CH-1/CH-3 dip point to the center marker. (<math>0 \pm 20</math> nsec)</p>	<ul style="list-style-type: none"> <li>• RV502/DEC-42(E-5)</li> <li>VIDEO control/ subcontrol panel</li> </ul> <p>TRIG: EXT/WFM</p>


#### 14-1-5. REC Component Y/C Delay Adjustment (Metal)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a 50% bowtie signal to the COMPONENT 2 IN connector.</li> <li>• MODE: REC/PB</li> <li>• Insert the BCT-20M cassette.</li> <li>• Play back the recorded portion.</li> </ul>	<p>COMPONENT 2 OUT/connector panel (at WFM)</p> <p>CH-1/CH-2                      CH-1/CH-3</p>  <p>Adjust the CH-1/CH-3 dip point to the center marker. (<math>0 \pm 20</math> nsec)</p>	<p>RV504/DEC-42(D-7) CHROMA control/ subcontrol panel</p> <p>TRIG: EXT</p>

#### 14-1-6. REC Component R-Y/B-Y Delay Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a 50% bowtie signal to the COMPONENT 2 IN connector.</li> <li>• MODE: REC/PB</li> <li>• Insert the BCT-20M cassette.</li> <li>• Connect the WFM and signal generator as shown in Section 14-1-2.</li> <li>• Play back the recorded portion.</li> </ul>	<p>COMPONENT 2 OUT/connector panel (VECTOR MODE/COMPONENT WFM)</p> <p>CH-1/CH-2                      CH-1/CH-3</p>  <p>Adjust the CH-1/CH-2 dip point to the center marker. (<math>0 \pm 20</math> nsec)</p>	<p>RV200/DEC-42(B-1)</p> <p>TRIG: EXT/COMPONENT WFM</p>

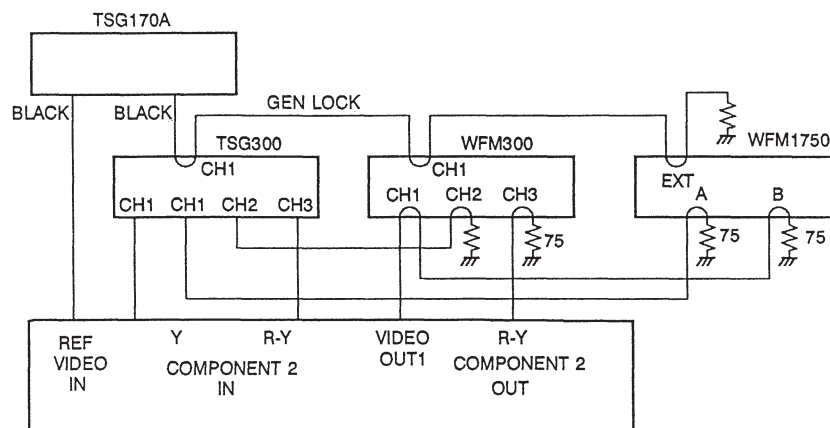
#### 14-1-7. Oxide REC Component Y/C Delay Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a 50% bowtie signal to the COMPONENT 2 IN connector.</li> <li>• MODE: REC/PB</li> <li>• Insert the BCT-20G cassette.</li> <li>• Connect the WFM and signal generator as shown in Section 14-1-2.</li> <li>• Play back the recorded portion.</li> </ul>	<p>COMPONENT 2 OUT/connector panel (VECTOR MODE/COMPONENT WFM)</p> <p>CH-1/CH-2                      CH-1/CH-3</p>  <p>Adjust the CH-1/CH-2 dip point to the center marker. (<math>0 \pm 20</math> nsec)</p>	<p>RV511/DEC-42(D-7)</p> <p>TRIG: EXT/COMPONENT WFM</p>

## 14-2. SYNC PHASE ADJUSTMENT

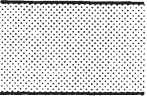
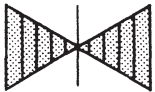
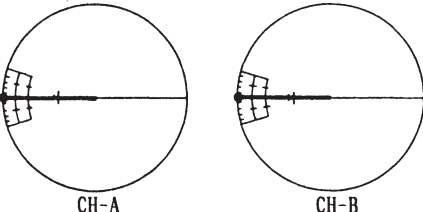
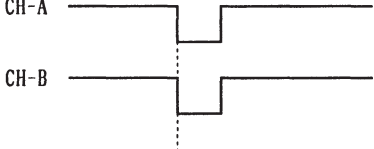
### 14-2-1. PB Composite Sync Phase Adjustment

#### 【Connection】

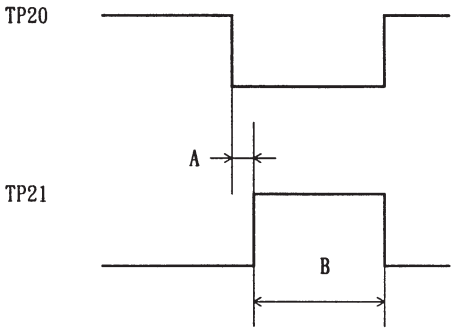


BVW-75

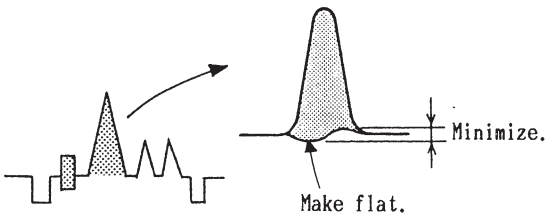
Note: The signal generator's SCH should be  $0 \pm 2^\circ$ .

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>S1/EN-48(A-3): ON.</li> <li>Connect the CH-2 of W.F.M. to CH-2 of component signal generator.</li> <li>CAPSTAN LOCK sw: 2FD</li> <li>Play back a bowtie signal on alignment tape CR5-1B.</li> </ul>	<p>Step 1</p> <p>VIDEO OUT 1/connector panel (bowtie MODE/WFM)</p> <p>CH-1/CH-3</p>  <p>CH-1/CH-2</p>  <p>Adjust the CH-1/CH-2 dip point to the center marker. (<math>0 \pm 20</math> nsec)</p>	<p>SYNC control/ subcontrol panel</p>
<ul style="list-style-type: none"> <li>Connect the CH-A of WFM/vector monitor to CH-1 of component signal generator.</li> </ul>	<p>Step 2</p> <p>VIDEO OUT 1/connector panel (SCH MODE/WAVEFORM VECTOR MONITOR)</p>  <p>CH-A</p> <p>CH-B</p> <p>Align the sync phase in CH-B with that in CH-A. At that time, check that the phase shown below is in phase.</p> <p>VIDEO OUT 1/connector panel (WFM MODE/WAVEFORM VECTOR MONITOR)</p>  <p>CH-A</p> <p>CH-B</p> <p>Check that the sync phase in CH-A and CH-B is in phase.</p>	<p>RV15/V0-18(C-4)</p> <p>TRIG: EXT MODE/WAVEFORM VECTOR MONITOR</p>

#### 14-2-2. ID Mix Pulse Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• INPUT SELECT SW: COMPOSITE</li> <li>• Supply a 75% color-bar signal to the VIDEO IN connector.</li> </ul>	<p>TP20/EN-48(D-2)</p> <p>TP21/EN-48(D-2)</p>  <p><math>A = 8 \pm 1 \mu\text{sec}</math></p> <p><math>B = 55 \pm 1 \mu\text{sec}</math></p>	<ul style="list-style-type: none"> <li>●RV25/EN-48(D-2)</li> <li>●RV26/EN-48(D-2)</li> </ul> <p>TRIG: TP20/EN-48(D-2)</p>

#### 14-2-3. PB Composite Y/C Delay Adjustment (Metal)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a bowtie(12.5T) signal on alignment tape CR5-1B.</li> </ul>	<p>VIDEO OUT 1/connector panel</p> 	<ul style="list-style-type: none"> <li>●RV350/EN-48(B-2)</li> </ul> <p>TRIG: INT/WFM</p>

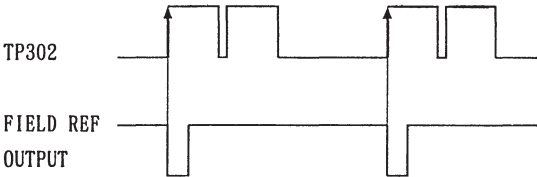
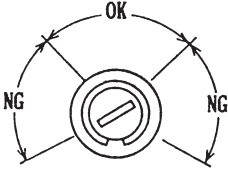
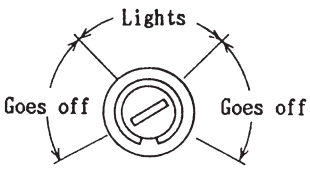
#### 14-2-4. Encoder Field Pulse Adjustment

machine conditions for adjustment	specifications	adjustments
<p>(EN framing pulse adjustment)</p> <ul style="list-style-type: none"> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• Supply a 75% color-bar signal to the VIDEO IN connector.</li> <li>• MODE: EE</li> </ul>	<p>VIDEO OUT/connector panel (SCH MODE/WAVEFORM VECTOR MONITOR)</p> <div style="text-align: center;"> </div> <p>For SCH of 90° , adjust so that the phase is inverted.</p> <p>TP31/EN-48(A-4)</p> <div style="text-align: center;"> </div> <p>TP16/EN-48(A-2)</p> <div style="text-align: center;"> </div> <div style="text-align: center;"> </div>	<p>●RV19/EN-48(C-2) SC control/ subcontrol panel</p> <p>TRIG: FIELD REF. PULSE</p>

#### 14-2-5. SCH OUT LED Adjustment

[illegible]

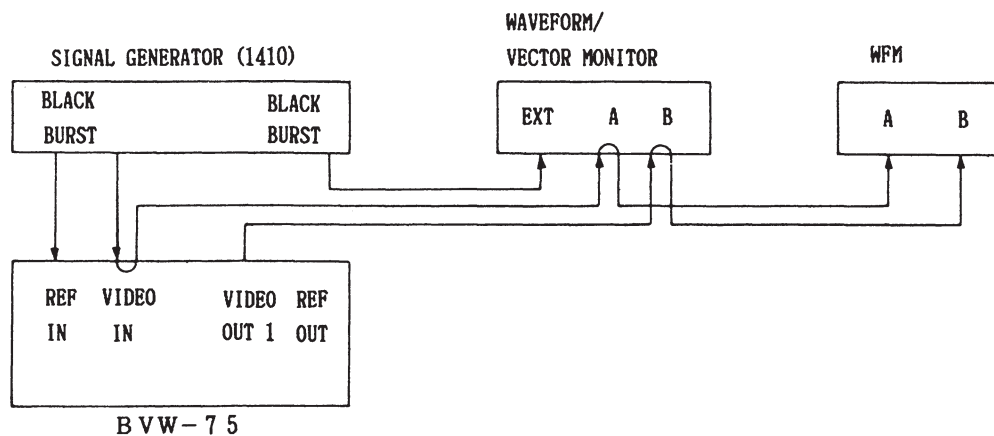
# 14-2-6. Decoder Field Pulse Adjustment

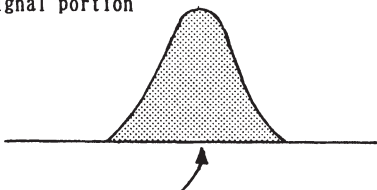
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a black burst signal to the VIDEO IN connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• AUTO/NON-STD sw: AUTO</li> <li>• MODE: EE</li> </ul>	<p>TP302/CF-36 on the DEC-42(E-6)</p> <p>FIELD REF output/signal generator</p>  <p>TP302</p> <p>FIELD REF OUTPUT</p> <ul style="list-style-type: none"> <li>• Fully turn RV506 to the right or left, turn it gradually to the center, then align the phase at TP302 with that of a FIELD REF signal.</li> </ul>  <p>Set the control to the center shown in the figure.</p> <p>TRIG: FIELD REF. PULSE</p>	<p>RV506/CF-36 on the DEC-42(E-7) board.</p>
	<ul style="list-style-type: none"> <li>• Fully turn RV507 to the right or left, turn it gradually to the center, then adjust it to the center of the range in which the front panel's SCH indicator lights.</li> </ul> 	<p>RV507/CF-36 on the DEC-42(E-7) board.</p> <ul style="list-style-type: none"> <li>• When the adjusted values are not within specs, with short-circuit by changing the solder connection to the next slit. SL3 to SL7 (CF-36)</li> </ul>



# 14-2-7. Composite Y/C Delay Adjustment

## 【Connection】

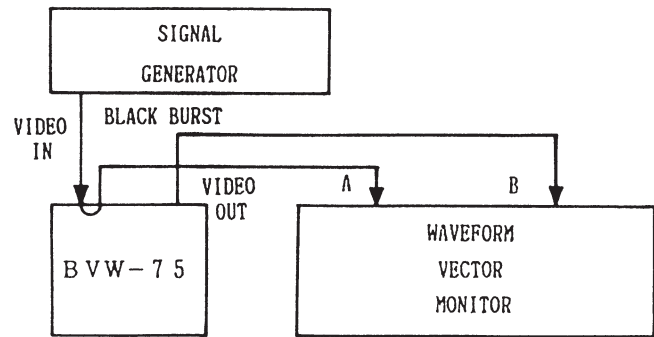



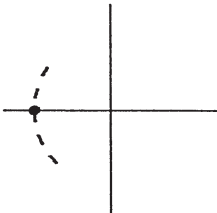
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a properly adjusted SCH pulse &amp; bar signal to the VIDEO IN connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• Insert the BCT-20M cassette and put the unit into the REC/PB mode.</li> <li>• CAPSTAN LOCK: 2FD</li> </ul>	VIDEO OUT 1/connector panel  SCH = 0°	SC control/ subcontrol panel
	(WFM) 12.5T signal portion   Make flat. (0 ± 20 nsec)	●RV12/DEC-27(F-1)  { Adjust in the EE mode so that the specifica- tion is satisfied. }

14-3. VISC ADJUSTMENT

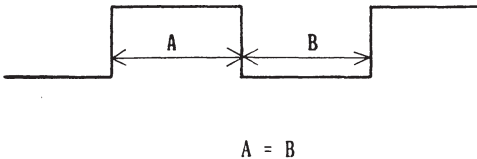
14-3-1. Decoder VISC Phase Adjustment

【Connection】

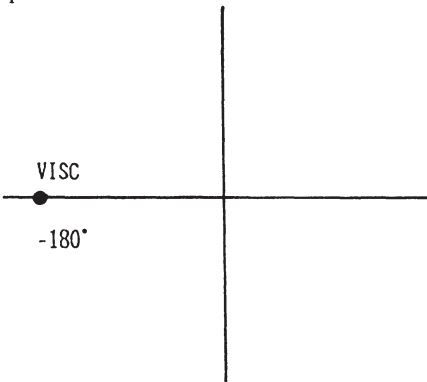


machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"><li>• S500-Bit4/TBC-8: ON</li><li>• S3-Bits1 to 8/TBC-9: ON</li><li>• S4-Bits1 to 7/TBC-9: ON</li><li>• S4-Bit8/TBC-9: OFF</li><li>• CAPSTAN LOCK sw: 2FD</li><li>• INPUT SELECT sw: COMPOSITE</li></ul>	<p>VIDEO IN/connector panel</p> <p>SCH = 0°</p> 	<p>SC PHASE/ Signal generator</p>
<p>Step 2</p>	<p>VIDEO OUT /connector panel</p> <p>SCH = 0°</p>	<p>SC control/ subcontrol panel</p>
<p>Step 3</p>	<p>VIDEO OUT /connector panel (VECT mode)</p>  <p>Align the VISC's jitter center with the burst phase.</p>	<p>RV510/CF-36 on the DEC-42(F-6) board.</p>

### 14-3-2. VISC Duty Cycle Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a black burst signal to the VIDEO IN connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• MODE: EE</li> </ul>	<p>TP701/EN-48(F-2)</p>  <p>A = B</p>	<p>RV703/EN-48(G-1)</p>

### 14-3-3. VISC Phase Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• S500-Bit4/TBC-8: ON</li> <li>• S3-Bits1 to 8/TBC-9: ON</li> <li>• S4-Bits1 to 7/TBC-9: ON</li> <li>• S4-Bit8/TBC-9: OFF</li> <li>• S4/VO-18: OFF</li> <li>• CAPSTAN LOCK sw: 4FD</li> <li>• Supply a black burst signal to the VIDEO IN connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> </ul>	<p>Step 1 VIDEO OUT 1/connector panel</p> <p>Adjust the burst position.</p>	<p>PHASE control/ WAVEFORM VECTOR MONITOR</p>
	<p>Step 2 VIDEO OUT 1/connector panel</p> <p>Align the VISC with the burst phase.</p>	<p>RV701/EN-48(G-1)</p>
	<p>Step 3 DUB/COMPONENT 1 Y OUT/connector panel</p> <p>Adjust the VISC phase to <math>-180^\circ</math>.</p>	<p>PHASE control/ WAVEFORM VECTOR MONITOR</p>
<ul style="list-style-type: none"> <li>• S4/VO-18: ON</li> </ul>	<p>Step 4</p> 	<p>RV702/EN-48(G-1)</p>





